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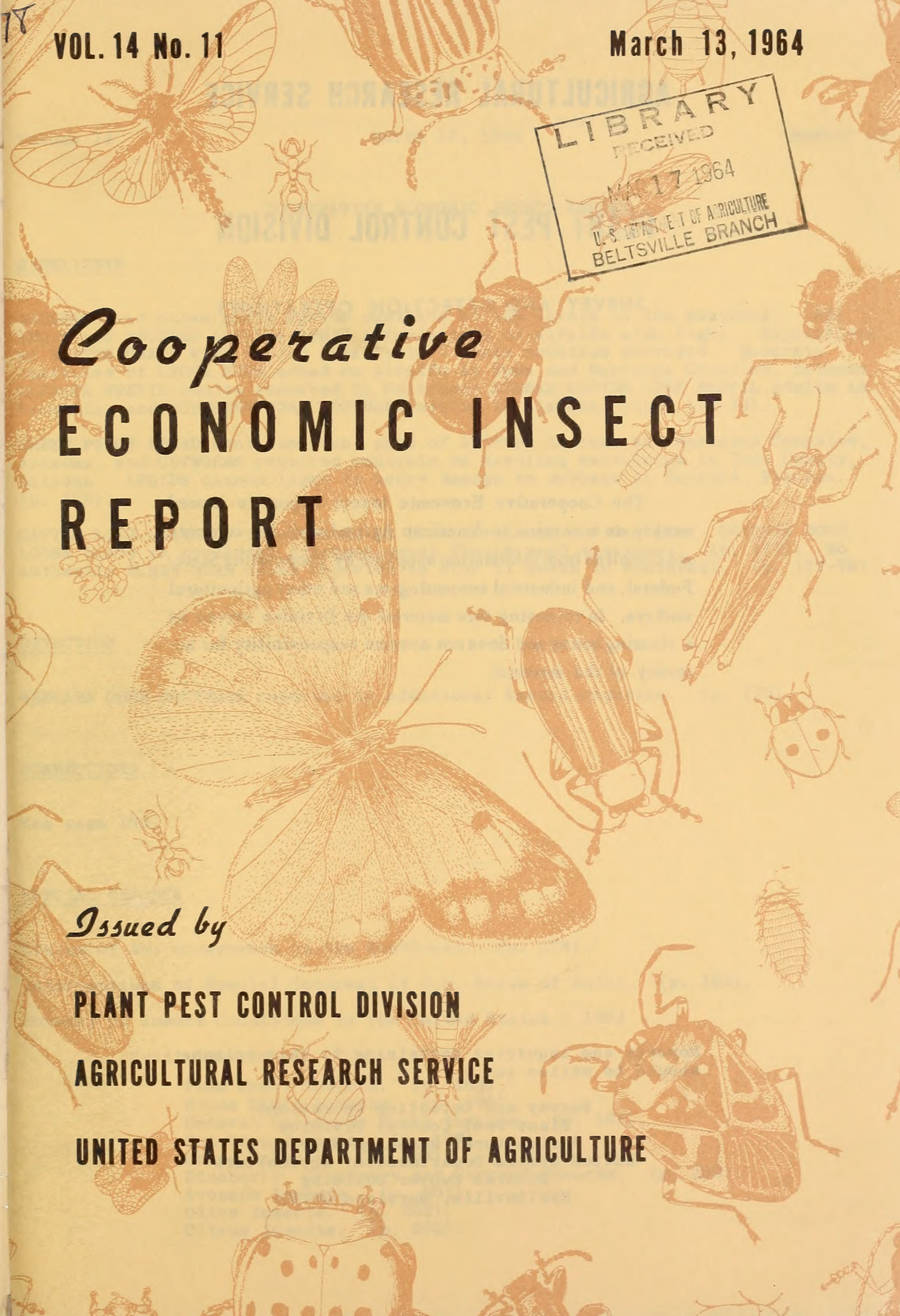

Cooperative ECONOMIC INSECT REPORT

Issued by

PLANT PEST CONTROL DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Volume 14 March 13, 1964 Number 11

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

GREENBUG and other grain aphids continue at low levels in the Southwest. PEA APHID and SPOTTED ALFALFA APHID infestations on alfalfa also light. Populations of WINTER GRAIN MITE varied greatly in 4 Texas counties surveyed. Moderate increases of LYGUS BUGS noted on alfalfa in Yuma and Maricopa Counties, Arizona. ALFALFA WEEVIL adults observed in Colorado; LESSER CLOVER LEAF WEEVIL adults in Virginia; and SOUTHERN CORN ROOTWORM adults in Alabama. (pp. 172-74).

GREEN PEACH APHID most important pest of lettuce in Yuma and Maricopa Counties, Arizona, and CUTWORMS required controls on seedling cantaloups in Yuma County, Arizona. APHIDS caused light to heavy damage to cabbage in Sanford, Florida. (p. 176).

CATTLE LICE continue troublesome in Utah, Oklahoma and Georgia. CHICKEN BODY LOUSE heavy in northwest Arkansas; most flocks need treatment. (p. 177). No authentic SCREW-WORM cases reported in over 11 weeks in Southwest. (p. 177-78).

DETECTION

WESTERN CORN ROOTWORM reported in additional Kansas counties. (p. 173).

CORRECTIONS

See page 180.

SPECIAL REPORTS

Status of the Screw-worm in the Southwest. (p. 178).

Interceptions of Special Interest at U.S. Ports of Entry. (p. 182).

Summary of Insect Conditions in the United States - 1963

Fruit Insects

- Pome Fruit Insects. (p. 183).
- Stone Fruit Insects. (p. 190).
- General Deciduous Fruit Insects. (p. 195).
- Nut Crop Insects. (p. 197).
- Grape Insects. (p. 199).
- Blueberry, Cranberry and Currant Insects. (p. 200).
- Avocado Insects. (p. 201).
- Olive Insects. (p. 202).
- Citrus Insects. (p. 202).

WEATHER OF THE WEEK ENDING MARCH 9

The weather on Monday, March 2, featured generous rains in the South - 3.27 inches at Abbeville, Alabama; subzero cold over the northern Great Plains; 8° below zero in northern Minnesota; heavy snow in the central and southern Rocky Mountains, with 9 inches at Flagstaff, Arizona.

The intensifying snowstorm moved eastward and divided. The northern system produced heavy snow over the Plains and midwest - up to 7 inches over parts of Oklahoma and more than 12 inches over parts of Illinois, Wisconsin and Michigan. The snow was whipped by strong winds of up to 72 m.p.h. at O'Hare Field, Chicago, Illinois; 80 m.p.h. near Milwaukee, Wisconsin; and 86 m.p.h. at Findlay, Ohio.

The southern system produced at least a dozen tornadoes in 6 States on Wednesday. The tornadoes killed one person in Arkansas and injured others in Missouri, Kentucky, Tennessee and Mississippi. Torrential rains occurred in connection with the squall lines. Wednesday totals included 3.62 inches at Evansville, Indiana; 4.17 inches at Huntington, West Virginia, and 3.03 inches at Memphis, Tennessee.

Mild temperatures prevailed over the eastern United States on Thursday: 71° F. at Albany, New York; 77° at Washington, D. C.; and 90° at Miami, Florida. A new storm in the Far Northwest produced moderate rains along the coast, accompained by winds of nearly 70 m.p.h., and snow to the interior.

As the weekend approached, a storm developed in the central Rocky Mountains. Wind-driven snow covered a broad belt from the Rocky Mountains, across the adjacent Plains, to the upper reaches of the Mississippi River. Mild, dry, mostly fair weather continued over the eastern third of the country and the extreme South.

More than a foot of snow fell in the Colorado Rockies Friday and Colorado Springs, Colorado, received 13 inches over the weekend. The storm moved quickly to the east. As frigid temperatures poured into the Dakotas and Minnesota, the weather over the South and East was like early summer. The front stretched from Texas to New England. Torrential rains occurred over the middle Mississippi River Valley and the lower Ohio River Valley. Tornadoes caused a number of deaths and much property damage.

Temperatures for the week averaged below normal from the Pacific Ocean to the Dakotas, Nebraska, Kansas, Oklahoma, and New Mexico, and above normal from those States eastward to the Atlantic coast. Temperature departures ranged from -14° over the Great Basin to +10° or more over the Ohio River Valley.

The heaviest rains fell over the lower Ohio River Valley where some weekly totals exceeded 7 inches. Rainfall totals exceeded 2 inches at some places along the Pacific coast from Tatoosh Island, Washington, to Eureka, California. Totals exceeded 2 inches from the lower Mississippi River Valley to the Appalachians. Most of the area from California to the Great Lakes received less than 0.5 inch of rain during the week. (Summary supplied by U.S. Weather Bureau).

CEREAL AND FORAGE INSECTS

GREENBUG (Schizaphis graminum) - NEW MEXICO - Light, spotted infestations continue in small grain in Chaves and Eddy Counties. (N. M. Coop. Rpt.). TEXAS - Found in 2 fields near Ethel, Grayson County; averaged only 3 per foot of drill row. Noneconomic at present. (Tex. Coop. Rpt.). OKLAHOMA - Remains below economic level; fewer than 10 per linear foot noted in Garfield and Kingfisher Counties. Negative in Cotton, Tillman, Beckham, Le Flore and Sequoyah Counties. (Okla. Coop. Sur.). ARKANSAS - Surveys continue negative in northwest area. (Ark. Ins. Sur.).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Light on small grains checked in Garfield and Kingfisher Counties; ranged 2-10 per linear foot. (Okla. Coop. Sur.).

APPLE GRAIN APHID (Rhopalsophum fitchii) - OKLAHOMA - Light populations present in Garfield (4-10 per foot) and Kingfisher (5-7 per foot) Counties. (Okla. Coop. Sur.).

ENGLISH GRAIN APHID (Macrosiphum avenae) - OKLAHOMA - Light; ranged 1-6 per linear foot in fields checked in Garfield and Kingfisher Counties. (Okla. Coop. Sur.). ARKANSAS - Surveys continue negative in northwest area. (Ark. Ins. Sur.).

SIX-SPOTTED LEAFHOPPER (Macrosteles fascifrons) - FLORIDA - In 100 sweeps, 18 adults collected on common rye at Gainesville, Alachua County. (Mead).

ARMY CUTWORM (Chorizagrotis auxiliaris) - OKLAHOMA - Light numbers noted in scattered fields in Garfield and Kingfisher Counties; ranged 1-1.5 per linear foot. (Okla. Coop. Sur.).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - OKLAHOMA - Survey of infested corn stalks in Beckham County shows 30 percent with live larvae. (Okla. Coop. Sur.).

WESTERN CORN ROOTWORM (Diabrotica virgifera) - KANSAS - Additional positive collections made in Nemaha, Brown, Doniphan, Jefferson, Leavenworth and Shawnee Counties during 1963. (Peters).

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Inspections made in Denton, Cooke, Grayson and Collin Counties. Populations varied greatly; heaviest populations in fields planted to small grain in 1963. (Tex. Coop. Rpt.). OKLAHOMA - Counts of 25 per linear foot noted in one field in Kingfisher County. (Okla. Coop. Sur.).

PEA APHID (Acyrthosiphon pisum) - ARIZONA - Infestations general on alfalfa in all areas of Maricopa, Pinal and Yuma Counties; continue very light. (Ariz. Coop. Sur.). OKLAHOMA - Light numbers only in overwintering alfalfa in Kingfisher County; checks negative in east central areas. (Okla. Coop. Sur.). ARKANSAS - Surveys continue negative in northwest area. (Ark. Ins. Sur.). FLORIDA - Infesting Hairy Peruvian alfalfa; about 2-3 per sweep. This is definite increase over previous collections. (Mead).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Continues spotted and light in alfalfa areas of Pinal, Maricopa and Yuma Counties. (Ariz. Coop. Sur.). OKLAHOMA - Occasional specimen noted in Kingfisher County, alfalfa; checks negative in east central areas. (Okla. Coop. Sur.). ARKANSAS - Surveys continue negative in northwest area. (Ark. Ins. Sur.).

TARNISHED PLANT BUG (Lygus lineolaris) - ARKANSAS - Occasional specimen collected on warm days in small grain and legumes in northwest area. (Ark. Ins. Sur.).

LYGUS BUGS (Lygus spp.) - ARIZONA - Moderate increases noted in alfalfa in Yuma and Maricopa Counties. Counts per 100 sweeps averaged 17 in Yuma County and 15-20 in Maricopa County. (Ariz. Coop. Sur.).

POTATO LEARHOPPER (*Empoasca fabae*) - FLORIDA - Populations, presumably this species, remain very low and show no buildup on alfalfa at Gainesville, Alachua County. (Mead).

A LEAFHOPPER (*Cuerna costalis*) - FLORIDA - Four adults taken in 200 sweeps on 12 to 18-inch high lupine at Gainesville, Alachua County. (Mead, March 3).

ALFALFA CATERPILLAR (*Colias eurytheme*) - ARIZONA - Slight increases found on alfalfa in Pinal, Maricopa and Yuma Counties. Larval counts per 100 sweeps averaged 10 in Pinal and Maricopa and 15 in Yuma County. (Ariz. Coop. Sur.).

ALFALFA WEEVIL (*Hypera postica*) - COLORADO - Adult activity observed on warm days; early controls underway in Mesa County. (Bulla).

LESSER CLOVER LEAF WEEVIL (*Hypera nigrirostris*) - VIRGINIA - Adults collected in alfalfa at Palmyra, Fluvanna County. (Tarpley, Watts; Feb. 17).

A WEEVIL (*Hypera brunneipennis*) - ARIZONA - Larval increases found in Pinal, Maricopa and Yuma Counties. Approximately 20 percent of terminals infested or damaged in some areas of Pinal and Maricopa Counties; about 10 percent damage found in Yuma County, except on Yuma Mesa where 60-80 percent terminal damage was found. (Ariz. Coop. Sur.).

SOUTHERN CORN ROOTWORM (*Diabrotica undecimpunctata howardi*) - ALABAMA - Large numbers of adults observed on oats, crimson clover and vetch in Henry County; temperatures reached 75-80° F. (Hartzog, Davis, Barefield, et al.).

CLOVER MITE (*Bryobia praetiosa*) - ARIZONA - Continues numerous in many alfalfa fields in Yuma County. (Ariz. Coop. Sur.).

FRUIT INSECTS

ITALIAN PEAR SCALE (*Epidiaspis piricola*) - CALIFORNIA - Heavy on bark and trunk of pear, peach and apple trees in Lompoc, Santa Barbara County. (Cal. Coop. Rpt.).

OYSTERSHELL SCALE (*Lepidosaphes ulmi*) - CALIFORNIA - Medium on apple trees in Avila Beach, San Luis Obispo County. (Cal. Coop. Rpt.).

SAN JOSE SCALE (*Aspidiotus perniciosus*) - FLORIDA - Moderate on Hood pear at Glen St. Mary, Baker County. (Collins, Feb. 25). ALABAMA - On numerous, isolated peach trees in Henry County. (Hartzog, Davis, Barefield).

NAVEL ORANGEWORM (*Paramyelois transitella*) - CALIFORNIA - Noted in mummy peaches in Mettler Station area, Kern County. (Cal. Coop. Rpt.).

HICKORY SHUCKWORM (*Laspyresia caryana*) - ALABAMA - Of 100 pecan shucks examined in orchard in Henry County, 20 larvae and 2 pupae found; pupation just started. (McQueen).

A LEAFHOPPER (*Empoasca kraemeri*) - FLORIDA - Light on leaves of mango at Goulds, Dade County. (Knowles).

OLIVE SCALE (*Parlatoria oleae*) - CALIFORNIA - Light on olive trees in Woodland area, Yolo County. (Cal. Coop. Rpt.).

AN ARMORED SCALE (*Aspidiotus lataniae*) - CALIFORNIA - Heavy on grapevines in Avila Beach, San Luis Obispo County. (Cal. Coop. Rpt.).

WHITE PEACH SCALE(*Pseudaulacaspispentagona*) - FLORIDA - Severe on stem of persimmon at Jacksonville Beach, Duval County. (King, Feb. 26).

MELON APHID (Aphis gossypii) - ARIZONA - Heavy infestations found on wild mustard weed hosts at bases of tangerine and orange interplants in Yuma County. Previous tree indexes indicated tangerines in this area infected with tristeza. (Ariz. Coop. Sur.).

YELLOW SCALE (Aonidiella citrina) - CALIFORNIA - Heavy on orange trees in San Simeon, San Luis Obispo County. (Cal. Coop. Rpt.).

CITRUS BUD MITE (Aceria sheldoni) - CALIFORNIA - Adults heavy on navel orange trees in Inglewood, Los Angeles County; this eriophyid usually attacks lemon in State. (Cal. Coop. Rpt.).

GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) - CALIFORNIA - Light on bushberries in San Luis Obispo, San Luis Obispo County, and light on citrus in Colton, San Bernardino County. (Cal. Coop. Rpt.).

TRUCK CROP INSECTS

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - General in lettuce fields of Maricopa and Yuma Counties. Infestations very small, with little control necessary. (Ariz. Coop. Sur.). FLORIDA - Caused light damage to 4 percent of 200 cabbage plants at Sanford, Seminole County. (Desin).

A LEAF ROLLER MOTH (Ptycholoma peritana) - CALIFORNIA - Larvae light on strawberry plants in Selma, Sanger and Reedley, Fresno County. (Cal. Coop. Rpt.).

CUTWORMS - ARIZONA - Unspecified species present in field of seedling cantaloups in Yuma County; controls necessary to prevent heavy losses. (Ariz. Coop. Sur.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Counts per 100 lettuce plants averaged 160 and 180 in Yuma and Maricopa Counties, respectively. Most important pest of this crop in these counties. (Ariz. Coop. Sur.).

MELON APHID (Aphis gossypii) - ARIZONA - Small populations found on lettuce in Yuma County; not yet a problem. (Ariz. Coop. Sur.).

CABBAGE APHID (Brevicoryne brassicae) - GEORGIA - Light on cabbage in Brooks and Colquitt Counties. (Johnson).

APHIDS - FLORIDA - Caused light to heavy damage to cabbage in Sanford, Seminole County. (Desin).

POPLAR PETIOLE GALL APHID (Pemphigus populitransversus) - ALABAMA - Extremely high numbers on roots of large purple top turnips in home garden in Henry County. (Barefield et al.).

A LEAF MINER FLY (Liriomyza sp.) - FLORIDA - Caused light damage to 96.5 percent of 200 celery plants at Sanford, Seminole County. (Desin).

TOBACCO INSECTS

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - GEORGIA - Light on tobacco in the plant bed in southern area. (Johnson).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - GEORGIA - Very light on tobacco in the plant bed in southern area. (Johnson).

COTTON INSECTS

A WEEVIL (Anthonomus sp.) - ARIZONA - Overwintering weevils not yet found in ground trash in survey areas of Pinal and Yuma Counties. Adults and larvae still found in bolls in infested fields. (Ariz. Coop. Sur.).

PINK BOLLWORM (Pectinophora gossypiella) - NEW MEXICO - Late instars found in checking roots of cotton in fields in southern Eddy County. Majority were dead. (N.M. Coop. Rpt.).

FOREST, ORNAMENTAL AND SHADE TREE INSECTS

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - TEXAS - Survey showed only 0.3 beetle brood tree per 1,000 acres over total of 2 million acres. Controls applied to active brood trees. Scattered, active brood trees located by ground survey in Jasper County; most infested trees previously struck by lightning. Five spots containing total of 13 brood trees located and controlled in southern Tyler County. (Tex. Forest Pest Comm., Feb. Rpt.). NORTH CAROLINA - Limited control work continues in Davidson and Randolph Counties. Some landowner control underway in Warren and Gates Counties. Estimated 75 percent of bark surfaces of infested trees being worked by woodpeckers in these areas. (Green).

BLACK TURPENTINE BEETLE (Dendroctonus terebrans) - TEXAS - Damage continues to decline; no additional infestations reported. (Tex. Forest Pest Comm., Feb. Rpt.).

ENGRAVER BEETLES (Ips spp.) - TEXAS - I. avulsus, I. grandicollis and I. calligraphus observed associated with Dendroctonus frontalis brood trees. No unusual infestations reported. (Tex. Forest Pest Comm., Feb. Rpt.).

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - ALABAMA - Examination of 3 to 6-year-old loblolly and shortleaf pine planting reveals extremely large numbers of pupae per tree; 3 pupae in tips of every bud on many trees not uncommon. No emergence noted. (Dennis et al.).

PINE BARK APHID (Pineus strobi) - VIRGINIA - Heavy on pine at home in Alexandria. Det. by M. Kosztarb. (Rowell, Feb. 3).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - VIRGINIA - Severe on seedling white pines locally in Augusta County. (Rowell, Morse, Feb. 19).

A MARGARODID SCALE (Stomacoccus platani) - CALIFORNIA - Adults heavy on twigs and limbs of sycamore trees in Santa Maria, Santa Brabara County. (Cal. Coop. Rpt.).

A SHIELD BEARER (Coptodisca sp.) - CALIFORNIA - Eggs heavy on Quercus sp. in Red Bluff, Tehama County. (Cal. Coop. Rpt.).

CITRUS MEALYBUG (Pseudococcus citri) - CALIFORNIA - Heavy on violets in Biggs, Butte County. (Cal. Coop. Rpt.).

A MEALYBUG (Pseudococcus obscurus) - CALIFORNIA - All stages heavy on fern stock in nursery in Oakland, Alameda County. (Cal. Coop. Rpt.).

TEA SCALE (Fiorinia theae) - ALABAMA - Causing serious damage to Camellia japonica at numerous homes and public buildings in Henry County. Plants still suffering from severe root and stem damage caused by extreme cold conditions during winter of 1962-63. Severe damage also noted on isolated Burford holly in Lee and Montgomery Counties. (McQueen).

HEMISPHERICAL SCALE (Saissetia hemisphaerica) - CALIFORNIA - Heavy on fern stock in retail store in Fresno, Fresno County, and heavy on palm fronds in Leucadia, San Diego County. (Cal. Coop. Rpt.).

ITALIAN PEAR SCALE (*Epidiaspis piricola*) - CALIFORNIA - Heavy on toyon shrubs in Memorial grounds in Santa Maria, Santa Barbara County. (Cal. Coop. Rpt.).

ARMORED SCALES - FLORIDA - *Pseudoparlatoria ostreata* locally severe on stem of *Acalypha* sp. at Fort Pierce, St. Lucie County. (Campbell, Feb. 24). CALIFORNIA - *Aspidiotus* sp., near *arcostaphyli*, heavy on Joshua trees in Claremont, Los Angeles County. (Cal. Coop. Rpt.).

APHIDS - CALIFORNIA - *Macrosiphum rosae* medium on roses in Fresno, Fresno County; unusually early this season. (Cal. Coop. Rpt.). OKLAHOMA - *Cinara thujafilina* active on arborvitae in Stillwater area, Payne County. (Okla. Coop. Sur.). MARYLAND - Undetermined species infesting iris indoors at University Park, Prince Georges County. (U. Md., Ent. Dept.).

CYCLAMEN MITE (*Steneotarsonemus pallidus*) - CALIFORNIA - Medium on *Aralia elegantissima* nursery stock in Redwood City, San Mateo County. (Cal. Coop. Rpt.).

A SPIDER MITE (*Petrobia harti*) - CALIFORNIA - Adults heavy on oxalis in Camarillo, Ventura County. (Cal. Coop. Rpt.).

MILLIPEDS - ALABAMA - Large numbers invaded azalea plant beds in nursery in Mobile County. Causing considerable damage to roots and in some cases entire plants girdled. (Seibels, Wallace et al.)

INSECTS AFFECTING MAN AND ANIMALS

COMMON CATTLE GRUB (*Hypoderma lineatum*) - OKLAHOMA - Continuing to decline; counts on yearling steers range 0-8 per head, averaged 2. (Okla. Coop. Sur.).

MOSQUITOES - DELAWARE - First instars of *Aedes canadensis* found in woodland pools in area in New Castle County. (Lake, Mellott).

CATTLE LICE - UTAH - Numerous untreated cattle herds conspicuously infested in Emery and Carbon Counties. (Knowlton). OKLAHOMA - Infestations of several species appear to be increasing in north central areas with considerable loss of hair on cattle noted. Ranged from under 1 per part to 3 per part. (Okla. Coop. Sur.). GEORGIA - Infestations of *Solenopotes capillatus* on 105 Herford yearlings in Putnam County ranged very light to heavy; averaged 3.7 per square inch. *Linognathus vituli* heavy on Herford cows in Butts County. (Roberts).

HOG LOUSE (*Haematopinus suis*) - ALABAMA - Examination of herd of 50 feeder hogs in Henry County showed heavy infestation. Other herd infestations much lighter. (Davis, Barefield et al.).

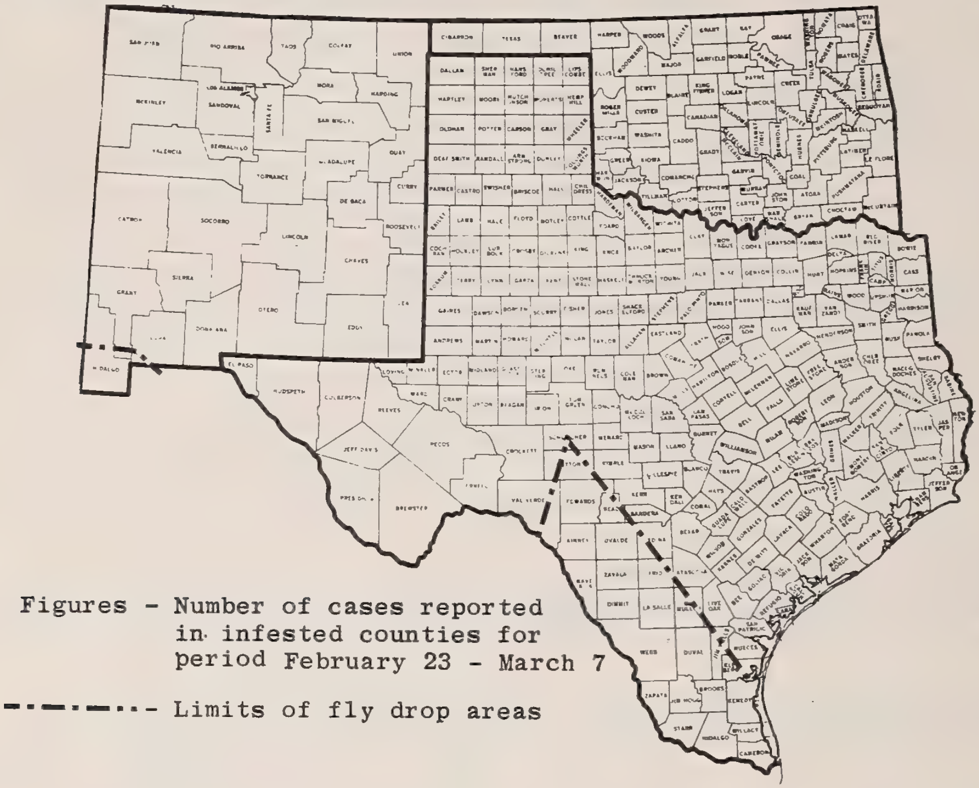
CHICKEN BODY LOUSE (*Menacanthus stramineus*) - ARKANSAS - Infestations continue heavy in northwest area; most flocks checked need treatment. (Ark. Ins. Sur.).

CAT FLEA (*Ctenocephalides felis*) - OKLAHOMA - Annoying in homes in Stillwater area, Payne County. (Okla. Coop. Sur.).

STATUS OF THE SCREW-WORM (*Cochliomyia hominivorax*) IN THE SOUTHWEST

No screw-worm cases were reported during the period February 23-29 nor again in the period March 1-7. This is over 11 weeks since the last authentic case of screw-worm was found in the eradication area.This time period is greater than any known pupation period. During the period February 23-29, owing to poor flying weather, fewer sterile flies were released. Approximately 13 million sterile flies were released in Texas and one million in New Mexico during that period; 19 specimens, which were not screw-worm, were reported from Texas.

During the period March 1-7, Texas ranchers submitted 43 cases of myiasis; 4 cases which were not screw-worm were reported from Arizona and one case of screw-worm collected in November, 1963, was also reported. Almost 86 million sterile flies were released during the period March 1-7. (Anim. Dis. Erad. Div.).



Figures - Number of cases reported in infested counties for period February 23 - March 7

-·-—·-—·-·- Limits of fly drop areas

HOUSEHOLD AND STRUCTURAL INSECTS

CLUSTER FLY (Pollenia rudis) - MICHIGAN - Annoying in Lansing area homes. (Janes). MARYLAND - Adults active and annoying in several homes in Baltimore and Prince Georges Counties. (U.Md., Ent. Dept.).

BLACK BLOW FLY (Phormia regina) - OKLAHOMA - Adults annoying around some public buildings in Stillwater area, Payne County. (Okla. Coop. Sur.).

COWPEA WEEVIL (Callosobruchus maculatus) - CALIFORNIA - Adults heavy in home in Fresno County. (Cal. Coop. Rpt.).

ELM LEAF BEETLE (Galerucella xanthomelaena) - VIRGINIA - Adults common in home in Orange, Orange County. (Tarpley, Estes, Feb. 24).

BLACK VINE WEEVIL (Brachyrhinus sulcatus) - DELAWARE - Adults present in home in New Castle County. (MacCreary).

CIGARETTE BEETLE (Lasioderma serricorne) - DELAWARE - Infesting chili powder and paprika in home in Kent County. (MacCreary).

BOXELDER BUG (Leptocoris trivittatus) - MICHIGAN - Caused some annoyance to homeowners in southern counties during springlike days of early March. (Dowdy). MARYLAND - Causing distinct annoyance by entering homes at Kensington, Montgomery County, and at Baltimore. (U.Md., Ent. Dept.) NORTH CAROLINA - Numerous in yard and on porch of home in Catawba County. (Giles, Robertson).

CLOVER MITE (Bryobia praetiosa) - DELAWARE - Causing some nuisance problems in homes in New Castle County. (Burbutis). VIRGINIA - Common in and around home in Montross, Westmoreland County. (Tarpley, Dawson, Feb. 24). MICHIGAN - Slightly active around homes. (Janes). UTAH - Invaded homes in Salt Lake City area, Salt Lake County. (Knowlton). NEW MEXICO - Nuisance by entering homes at Roswell, Chaves County. (N. M. Coop. Rpt.).

LARGER YELLOW ANT (Acanthomyops interjectus) - NORTH CAROLINA - Annoying numbers present in Wake County home. (Mount).

PAINTED HICKORY BORER (Megacyllene caryae) - MISSOURI - Emerging from firewood and wood materials stored in buildings in Boone County. (Houser, Thomas, Wood).

TERMITES - ARKANSAS - Heavy flight observed in building in Washington County; this is first report of season. (Ark. Ins. Sur.).

STORED-PRODUCT INSECTS

GRANARY WEEVIL (Sitophilus granarius) - NEVADA - Light in mixed feeds in feed-store in Gardnerville, Douglas County. (Bechtel, Rivers).

A FUNGUS BEETLE (Litargus balteatus) - CALIFORNIA - Adults light on grain debris on ranch in Corcoran, Kings County. (Cal. Coop. Rpt.).

Stored-product Insects in Alabama - Live adults of Sitophilus granarium, Attagenus piceus, Oryzaephilus surinamensis and a black fungus beetle recovered from 2 recently fumigated warehouses in Mobile County. Dead specimens of Lasioderma serricorne, Tribolium spp. and Sitophilus oryzae also recovered. (Seibels, Wallace).

SHALLOT APHID (Myzus ascalonicus) - COLORADO - Infesting onions in Fort Collins, Larimer County, chain store. Det. by M. A. Palmer. (Colo. Ins. Sur.).

BENEFICIAL INSECTS

HONEY BEE (Apis mellifera) - WISCONSIN - Workers observed searching with considerable "robbing" of hives occurring. Prevalent in area where about 75 percent of colonies exist. Flight occurred on warmer days of February. (Wis. Ins. Sur.).

A BIG-EYED BUG (Geocoris punctipes) - ARKANSAS - Occasional specimen observed in vetch in northwest area. (Ark. Ins. Sur.).

MISCELLANEOUS INSECTS

NOCTUID MOTHS - CALIFORNIA - Light numbers of Litoprosopus coachella larvae entered sport shop in Chowchilla, Madera County; destroyed several garments and balsa wood. Larvae are occasionally a considerable nuisance and quite destructive to clothing, rugs and other fabrics when seeking pupation sites. (Cal. Coop. Rpt.). WISCONSIN - Four adults of Lithophane laticinera taken in blacklight trap at Middleton, Dane County, March 2. (Wis. Ins. Sur.).

FALL CANKERWORM (Alsophila pometaria) - MISSOURI - Moderate to heavy flights of males in Boone County. (Houser, Thomas, Wood).

A SEED BEETLE (Megacerus discoideus) - COLORADO - Live adults infesting morning-glory seed in areas west of Colorado Springs, El Paso County; field infestation moderately heavy. Det. by T. O.Thatcher. (Great West. Sugar Co., Oldemeyer).

GREEN PEACH APHID (Myzus persicae) - UTAH - Problem in some experimental greenhouses at Logan, Cache County. (Knowlton).

TEXAS LEAF-CUTTING ANT (Atta texana) - TEXAS - Scattered colonies increasing in citrus groves, town properties, residential lawns and other places in northern Hidalgo County. (Tex. Coop. Rpt., Page).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - ALABAMA - Extremely active in Henry County following 3-5 inches of rain; temperatures up to 80° F. Balls of ants 1-5 inches in diameter observed floating on quickly formed lakes following heavy rains. Ants floated to land, often 100 feet distant. One colony in mound under home, entered house and constructed nest between wall and refregator. (Hartzog, Dennis, et al.).

CORRECTIONS

CEIR 14(9): 115 - FLOWER FLIES - FLORIDA - Collection of Psilota buccata on February 24, 1919, was made by P. W. Fattig.

LIGHT TRAP COLLECTIONS

	Tempera-ture	Precipi-tation	Type of trap *	*Agrotis ipsilon* (black cutworm)	*Carpocapsa pomonella* (codling moth)	*Chorizagrotis auxiliaris* (army cutworm)	*Estigmene acrea* (salt-marsh caterpillar)	*Faronta diffusa* (wheat head armyworm)	*Feltia subterranea* (granulate cutworm)	*Heliothis virescens* (tobacco budworm)	*Heliothis zea* (bollworm, corn earworm)	*Laphygma frugiperda* (fall armyworm)	*Loxostege commixtalis* (alfalfa webworm)	*Loxostege similalis* (garden webworm)	*Loxostege sticticalis* (beet webworm)	*Ostrinia nubilalis* (European corn borer)	*Peridroma saucia* (variegated cutworm)	*Prodenia ornithogalli* (yellow-striped armyworm)	*Protoparce quinquemaculata* (tomato hornworm)	*Protoparce sexta* (tobacco hornworm)	*Pseudaletia unipuncta* (armyworm)	*Spodoptera exigua* (beet armyworm)	*Trichoplusia ni* (cabbage looper)	Major crop **
CALIFORNIA Davis 2/29-3/6																	2							Misc.
FLORIDA Gainesville 3/3			BL						7									5			5			
GEORGIA Tifton 2/27-3/4			BL							0	0								0	0				
MISSISSIPPI Stoneville 3/1-6			MV	1													1	2						
TEXAS Brownsville 2/27-3/4			5 BL	34			38		355		171	54		1026			17	46			44		28	
SOUTH CAROLINA Charleston 3/2-8		1.55"	BL	2			0		4	0	0	0					1	0	0	0	9		0	

* BL blacklight; I = incandescent; MV = mercury vapor ; O = other

** alf. = alfalfa; beet = garden beet and/or sugar beet; cole = cole crops (crucifers); cott. = cotton; FC = field corn; grain = small grains; leg. legumes (unspecified); lett. lettuce; pean. = peanut; pepp. = pepper; pot. = potatoes; SC sweet corn; sol. = solanaceous plants (unspecified); soy. = soybean; TC = truck crops (unspecified or mixed); tob. = tobacco; tom. tomato.

INTERCEPTIONS OF SPECIAL INTEREST AT U.S. PORTS OF ENTRY

Some important interceptions that were reported by the Plant Quarantine Division, ARS, USDA, on December 31, 1963, follow. These reports are based on identifications received from Federal taxonomists at the U.S. National Museum during the month, and include any of special interest from recent months that were not previously reported.

A GIANT AFRICAN SNAIL (*Achatina fulica* (Bowdich)) once in cargo of conex boxes at Portland, Oregon.

LEEK MOTH (*Acrolepia assectella* (Zeller)) 8 times in stores on leek; 3 times at New York, New York; 2 times at Charleston, South Carolina; 2 times at Philadelphia, Pennsylvania; and once at Seattle, Washington.

MEXICAN FRUIT FLY (*Anastrepha ludens* (Loew)) 5 times; 2 times in stores and cargo at Tampa, Florida; 1 time each at Miami, Florida; Brownsville, Texas; and New York, New York.

PEACH FRUIT MOTH (*Carposina niponensis* (Walsingham)) in stores in apples; 3 times at Seattle, Washington; and one time each at Charleston, South Carolina, and Honolulu, Hawaii.

MEDITERRANEAN FRUIT FLY (*Ceratitis capitata* (Wied.)) 5 times in oranges and grapefruit; 2 times in stores at Mobile, Alabama; 2 times each in baggage at Chicago, Illinois, and New York, New York; and 1 time in stores at Dover, Delaware.

ASIATIC RICE BORER (*Chilo suppressalis* (Walker)) once in rice straw in stores at Philadelphia, Pennsylvania.

OLIVE FRUIT FLY (*Dacus oleae* (Gmelin)) once in baggage at Chicago, Illinois.

CABBAGE MOTH (*Mamestra brassicae* (L.)) 7 times in stores; 3 times at New York, New York; one time each at Duluth, Minnesota; Seattle, Washington; Philadelphia, Pennsylvania; and San Juan, Puerto Rico.

AN OLETHREUTID MOTH (*Matsumuraeses phaseoli* (Mats.)) 4 times in stores at Seattle, Washington.

A STENOMID MOTH (*Stenoma catenifer* (Walsingham)) once in quarters at Jacksonville, Florida.

WHITE GARDEN SNAIL (*Theba pisana* (Müller)) 2 times in cargo; one time each at Wilmington, North Carolina, and New Orleans, Louisiana.

KHAPRA BEETLE (*Trogoderma granarium* Everts) (or probably that species) 20 times in ships' holds, stores, and cargoes of gum karaya, gum arabic, gum kordofan, burlap bags as a commodity or as wrappings around coir yarn, dahl seed, myrobalan, black pepper, and guar gum; 5 times at New York, New York; 6 times at Charleston, South Carolina; 3 times at Philadelphia, Pennsylvania; 3 times at Seattle, Washington; 2 times at Baltimore, Maryland; and 1 time at Portland, Oregon.

GOLDEN NEMATODE (*Heterodera rostochiensis* (Woll.)) 7 times; 2 times in planes' baggage and 1 time in plane's cargo, at New York International Airport, New York; 1 time each in ships' stores at Honolulu, Hawaii, and at San Diego, California; one time in plane's quarters at Boston, Massachusetts.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1963

(continued from page 170)

FRUIT INSECTS

POME FRUIT INSECTS

Highlights:

CODLING MOTH was well controlled in most Western States, but a few "hot spots" in Oregon and New Mexico were troublesome. Populations were extremely light and little damage was recorded in the Midwest and New England, but second-brood larvae caused considerable injury to fruits in the Piedmont and northern areas of Virginia. Other lepidopterous pests of pome fruits, such as RED-BANDED LEAF ROLLER, EYE-SPOTTED BUD MOTH, UNSPOTTED TENTIFORM LEAF MINER and APPLE-AND-THORN SKELETONIZER caused some localized damage, but they were not of great importance generally. EUROPEAN RED MITE and TWO-SPOTTED SPIDER MITE were both of major importance during the year, and considerable bronzing of leaves occurred in areas of the Midwest, New England, middle and south Atlantic States. Difficulties were experienced in maintaining control of European red mite in the Vincennes area of Indiana since this mite has developed resistance to most of the acaricides labeled for use on apples. European red mite also continued to be the most serious spider mite pest of pear in central Washington, and two-spotted spider mite was a serious threat in Colorado where poor controls were reported by many apple growers using the latest acaricides. Tetranychus mcdanieli was a problem locally in central Washington during August and September, and various species of Tetranychus caused severe damage to foliage of apple trees in orchards not properly treated in northern New Mexico. PEAR RUST MITE and PEAR LEAF BLISTER MITE continued serious on new pear plantings in the Columbia Basin of Washington and caused damage in the Yakima Valley, same State. Pear rust mite constituted a serious problem in Jackson County, Oregon, and APPLE RUST MITE was recorded for the first time in Maine. APHIDS were not of great importance on pomaceous fruit trees in 1963, but some infestations warranted controls. Injury by the PEAR PSYLLA to pear trees and fruit in central Washington was greater than any time since 1957, and resistance continued to spread. APPLE MAGGOT was of some consequence in 1963, with some home orchardists reporting control problems. Few commercial growers were troubled, although control was more difficult since adult emergence extended over a longer period than normal.

CODLING MOTH (Carpocapsa pomonella) emergence was noted May 18 in Marion County, OREGON, May 25 in Jackson County and May 29 in Hood River County. This is considerably later than usual for the State. Poor weather for spraying resulted in some heavier than usual infestations in Hood River County but other areas had little trouble where controls were applied as recommended. Generally light infestations were noted in CALIFORNIA on diciduous fruits; a few medium infestations developed, however. Codling moth was fewer in numbers in MONTANA than it had been in previous years. A similar condition also existed in UTAH where it was below average in numbers or importance. With the prospect of a light crop in COLORADO, it was necessary for apple growers to cut operational costs to break even. The number of spray applications was held to a minimum and many growers omitted one or more of the sprays which were posted. This had been done in past years by a number of the growers and it is considered a calculated-risk program. Such a program requires exact timing of sprays and frequent inspections of the orchard; this has been quite successful in areas where infested and neglected trees have been removed and the overall population is low. It becomes exceedingly more difficult in heavily infested areas. With this shift to fewer sprays, there was an increase in the number of "stings" and "worm" entries but control was still 94-98 percent effective which offset the cost of additional sprays. The number of sprays posted was reduced in some areas to as few as 4 summer sprays. The pear crop was light in all of western Colorado with an estimated one-half crop; control ranged from fair to good. An estimated 3-4 percent loss was due to "worms." Many orchards in Espanola and Hondo Valleys of NEW MEXICO had extensive damage because of improper timing and inadequate spraying of fruit trees. Extensive damage occurred with considerable quality reduction of fruit. Several reports of difficulty of kill were noted in Velarde area of Rio Arriba County.

Mortality of overwintering codling moth larvae appeared high in KANSAS as indicated by low emergence from banded trees in Doniphan County. Pupae were found by April 25. Infestations throughout the summer were generally light in commercial orchards except one in Sedgwick County which was poorly sprayed following a hailstorm. Unsprayed check trees in an experimental orchard in Doniphan County averaged over 80 percent of the fruit "wormy" at harvest. Some damage was noted in Butler County, NEBRASKA. Codling moth was conspicuously absent in MISSOURI until very late in autumn. A brood which would normally be considered a partial third appeared in early September. This moth was well controlled most of the season in ILLINOIS. A few orchardists permitted the second brood to become numerous enough to cause far too much injury. Populations and injury were extremely light in INDIANA in the Vincennes area of Knox County. This was due to the cold, spring temperatures that retarded first-generation activity but also because of the outstanding insecticides used to prevent injury. The first adults of the season in OHIO occurred at Wooster, Wayne County, May 17-22. Peak of the summer-generation adults emerged the second week of August. Very low temperatures in January and February caused a high mortality to overwintering larvae. Populations were light through July and control was excellent; but when spraying against the summer brood was relaxed, some minor injury occurred. Good statewide control was obtained in MICHIGAN in commercial orchards. The second generation did considerable damage in the southeastern district of MINNESOTA in the second week of August in a few orchards.

Codling moth populations were generally low in New England; they were extremely low in VERMONT and generally very low throughout MAINE even in abandoned or untreated blocks. In the Hudson Valley of NEW YORK populations were so low, due to effective control measures, that no outbreak developed. Several entries were noted in late July in one northern Clinton County orchard.

Codling moth was very difficult to find in commercial apple orchards of NEW JERSEY although observations in unsprayed orchards indicated that populations remained at high levels. Damage to all commercial orchards in Hancock area, Washington County, MARYLAND, was usually light. Heavy numbers were observed in one abandoned orchard. At Hancock, the first moths emerged May 7, first entries were noted May 20 and second-brood entries were found July 17. Second-brood larvae caused considerable injury to fruits in VIRGINIA in a few orchards in the Piedmont and northern Virginia; it was more prevalent in all orchards in 1963 than it was in 1962.

Codling moth is still present in SOUTH CAROLINA and demonstrated its ability to build up rapidly in this three-generation area.

EYE-SPOTTED BUD MOTH (*Spilonota ocellana*) populations were generally low throughout MAINE. Some negligible to light summer-generation damage on mature fruit was reported but levels were very low even in abandoned or untreated blocks. This pest was reported down from the usual levels in NEW HAMPSHIRE. In RHODE ISLAND, light infestations were reported on unsprayed trees in Kingston, Washington County, and West Warwick, Kent County, in early May. Eye-spotted bud moth began feeding on opening buds of apples in WISCONSIN in Door County during the second week of May. Some controls were needed despite the high winter mortality. This pest caused many "stings" on apples in MONTANA late in the season.

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) generally spread throughout MAINE on Cortland and other varieties of apples. The very late appearance of second-brood larvae also caused some concern. Injury was reported to be from 2 to 5 percent. Infestations in Maine, although relatively low, appear to be increasing in numbers and localities affected. Populations were generally light and easily controlled in most instances but the rise in incidence would seem to indicate some grower inattention. This leaf roller was down from the usual levels in NEW HAMPSHIRE during the season. Populations were extremely low in VERMONT. Eggs were collected June 5 in RHODE ISLAND on an apple tree at Exeter, Washington County; there was no evidence of an economically important buildup. Heavy flights were noted in NEW YORK in three orchards in the Champlain Valley. This pest was not a problem in NEW JERSEY apple orchards in 1963. Infestations were light in central and northern VIRGINIA and in western MARYLAND commercial orchards.

Red-banded leaf roller caused light damage in some Doniphan County, KANSAS, orchards late in the season because of a delayed harvest. Egg counts were high in all orchards surveyed on April 24 when up to 100 egg masses were found on some trees. Over 100 egg masses were counted on one Ben Davis apple tree in Doniphan County on October 19. This leaf roller moth was present only as a first brood in MISSOURI and it was difficult to find the remainder of the season. In ILLINOIS, it could be found in many orchards throughout the season, but it was generally controlled well. Adults began appearing the first week of May in WISCONSIN. Blacklight trap catches of second-brood adults were made at Gays Mills, Crawford County, on June 25 (about 3 weeks later than in 1962) and the peak was reached on July 4 (a full month later than in 1962). The last moth caught was on July 8. Counts were somewhat higher in southwest Wisconsin than in 1962. A high population of the second-brood larvae occurred in Door County in poorly controlled orchards. No commercial problems were reported in MICHIGAN which makes the 1963 season unique in this respect. This pest was not of major concern to growerssin OHIO and INDIANA during the season.

UNSPOTTED TENTIFORM LEAF MINER (Calisto geminatella) moths were abundant in Doniphan County, KANSAS, orchards by April 24. Nearly 100 percent of the leaves were injured in orchards where control measures were not applied. Young, unsprayed plantings in Sedwick County were severely injured. A LEAF BLOTCH MINER (Lithocolletes blancardella) again reached an infestation level in ILLINOIS where several larvae per leaf were noted in orchards in Calhoun County. It was observed to have spread over the entire county and into neighboring counties. Another leaf blotch miner, L. crataegella, was minor in MAINE in commercial blocks but populations in untreated blocks were well above those of 1961 and 1962. First-generation moths were on the wing and ovipositing by August 10 in central Maine.

Other lepidopterous pests of pome fruit included APPLE-AND-THORN SKELETONIZER (Anthophila pariana) in OREGON where it was very abundant in Linn, Benton and Marion Counties late in the summer. Unsprayed apple orchards had heavy leaf damage. SPOTTED CUTWORM (Amathes c-nigrum) also caused considerable injury to inner leaves of pear trees during June in Jackson County, Oregon. In MARYLAND, GREEN FRUITWORM (Lithophane antennata) caused moderate damage in one orchard at Hancock, Washington County, during May. ELM SPANWORM (Ennomos subsignarius) disappeared from the apple-growing area of GEORGIA with the exception of Rabun County. There were extensive egg populations in Union County in 1963 but either the eggs did not hatch or the larvae succumbed soon after hatching. CANKERWORMS caused light to heavy defoliation of apples in the southeast of NORTH DAKOTA.

EUROPEAN RED MITE (Panonychus ulmi) overwintering egg hatch began in Wooster, OHIO, on April 3. Peak was reached during the last week in April. Cool weather during the spring months caused one of the longest hatching periods on record at Wooster, Wayne County. This spider mite was not so injurious as in 1962 although it is still the major pest of apples. Most growers controlled it effectively through the season but bronzing in some orchards appeared in the later part of August. In INDIANA, European red mite continued to be the most prevalent species attacking fruit in Vincennes area, Knox County, although early season activity was retarded because of the low spring temperatures. Heavy populations developed by midseason and difficulties were experienced in maintaining control since this mite has developed resistance to most of the acaricides labeled for use on apples. Extremely heavy populations as overwintering eggs were present in most apple orchards in MISSOURI but controls were satisfactory by early season spray. European red mite caused bronzing of apple foliage in KANSAS during the dry, warm spring. In MINNESOTA, this spider mite was a problem on apples until the blooming stage.

European red mite was extremely high in some apple orchards of VERMONT and the warm, dry summer favored buildup in eastern MASSACHUSETTS. European red mite was the most troublesome pest confronting NEW YORK orchardists in 1963. Populations reached peak activity on apple near mid-July and continued at high levels until early September. This species was the major problem in southern and central NEW JERSEY and it was serious on most apple orchards. Mite control, particularly this species, was the most persistent problem on apples in PENNSYLVANIA. This pest was at low levels in May and June in VIRGINIA but it heavily infested most apple orchards throughout the summer causing much injury. In NORTH CAROLINA, it was the most troublesome pest of apple orchards in the mountain counties where populations were higher than in 1962. European red mite is a major problem on apples in SOUTH CAROLINA.

European red mite continued to be the most serious spider mite pest of pear in central WASHINGTON.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) populations became damaging to apple plantings in the southwest part of MICHIGAN in August. Statewide injury was comparable with other years. This spider mite was abundant in apple orchards of INDIANA, especially in the southern half of the State. Populations were not so heavy as those experienced from 1960 through 1962 because of the cool, wet spring. This species is resistant to most of the labeled acaricides in Indiana. High populations were reached early in the season in ILLINOIS on plants under the trees, and the early drying of these plants and the higher populations caused control problems to appear earlier and be more intense. The weather continued favorable for mites long after apple harvest which gave mites adequate time to build up high populations after spraying had ceased. High carryover into next season can be expected in Illinois on many apple orchards. Two-spotted spider mite was a problem in MINNESOTA on apples until blooming stage and it was observed on apple trees over NORTH DAKOTA. This spider mite caused bronzing during the dry, warm spring in KANSAS but no other damage occurred until late August and September when it again increased in numbers. This species was again a serious threat in COLORADO; poor controls were reported by many apple growers using the latest acaricides. Populations reached highs of 30-40 per leaf in the latter part of July and August but frequent showers aided in bringing them under control. Research on some new acaricides not yet registered showed very promising results. Control was of most concern to Colorado pear growers; poor to fair control was noted with light to moderate injury.

Two-spotted spider mite was locally heavy on pears and apples in CALIFORNIA in a few instances. PACIFIC SPIDER MITE (Tetranychus pacificus) was locally light on pear in Los Angeles County and T. mcdanieli, which is not usual in California, occurred on apples in Yucaipa, San Bernardino County. Two-spotted spider mite ranged 2-30 per unopened bud cluster in Jackson County, OREGON, pear orchards early in March. Summer and fall infestations remained heavy with about the same acaricidal resistance as usual noted. Hot, dry weather during August and September in WASHINGTON was very favorable for rapid development of Tetranychus mcdanieli on apple and other fruit trees in the central area. Tetranychus spp. caused severe damage to foliage of apple trees in orchards not properly treated in the northern counties of NEW MEXICO.

Two-spotted spider mite populations were above normal throughout the season in MAINE. Infestations were well up in trees by late June, a condition not usually found until late July and August, if at all in most seasons. Increase in abundance was undoubtly caused by high temperatures and low rainfall throughout most of July and August. Heavy infestations were observed on Red Delicious apples on September 28. Heavy growth of bindweed in several orchards increased the speed with which *T. telarius* moved up the trees to low branches. Some bindweed leaves had up to 200 mites in late July and early August. Unspecified SPIDER MITES were widespread and extremely heavy in several commercial apple orchards in the Hancock area, Washington County, MARYLAND. Repeated applications of acaricides were necessary in some orchards to obtain satisfactory control. SCHOENE SPIDER MITE (*T. schoenei*) was at low levels in May and June in VIRGINIA but it heavily infested most apple orchards throughout the summer causing much injury. Two-spotted spider mite is probably the main spider mite problem in SOUTH CAROLINA where they leave the cover crops and weeds and go to the trees. Spider mites on apple are a problem of the first magnitude in that State.

PEAR RUST MITE (*Epitrimerus pyri*) and PEAR LEAF BLISTER MITE (*Eriophyes pyri*) continued to be serious pests of new pear plantings in the Columbia Basin of WASHINGTON. Postharvest treatments were still the most effective control, but some orchards were not sprayed at that time. These eriophyid mites also caused damage in Yakima Valley orchards. Pear rust mite constituted a serious problem in Jackson County, OREGON, fruit orchards throughout the summer; extra spray applications were necessary in many orchards. In CALIFORNIA, pear rust mite was prevalent on pear trees in El Dorado County and pear leaf blister mite was medium locally on Solano County pear trees. Pear leaf blister mite infested untreated fruit trees in the western counties of MONTANA. This eriophyid mite was approximately normal in numbers and/or injury in UTAH and it was extremely light in all the pear orchards of COLORADO where no injury was noted on any of the fruits. The number of cover sprays in Colorado was reduced to as few as 3 in some areas. Pear rust mite was generally abundant on pears throughout western NEW YORK during early June.

APPLE RUST MITE (*Aculus schlechtendali*) was observed in one apple orchard in MAINE at Winterport, Waldo County. Uniform infestation throughout the orchard would indicate that this eriophyid species had been present for some time, but it did not reach noticeable levels until 1963. A carbamate gave excellent control in the fourth cover. Elsewhere in Maine, an eriophyid mite, believed to be pear leaf blister mite, infested 30-80 percent of the leaves in an orchard in Wilton, Somerset County. Apple rust mite damage caused concern in PENNSYLVANIA in a few orchards in the south central area. Pear rust mite caused injury in a few southwestern MICHIGAN orchards.

APPLE APHID (*Aphis pomi*) winged migrants were moving about June 9 in most areas of MAINE; colonies were established in the southern area by June 14 and in the central area by June 28. Infestations for the most part, however, remained at low or negligible levels for the remainder of the season. Apple aphid was frequently observed on suckers and terminal growth in VERMONT orchards. This aphid was generally present as small infestations in neglected apple orchards in RHODE ISLAND but it was not a big problem in commercial orchards. Apple aphid was also present in most apple orchards of NEW JERSEY and MARYLAND but it was kept under control with various spray programs. Infestations in VIRGINIA were normal. There were no serious outbreaks of apple aphid in INDIANA in the Vincennes area of Knox County. Aphids, principally apple aphid, became prevalent in WISCONSIN; controls were needed in many orchards. Small to moderate numbers of apple aphid were found in NORTH DAKOTA in the Fargo area, Cass County. Overwintering eggs of this and other species were very abundant on apple trees in MISSOURI. Apple aphid was much in evidence in MONTANA where it was not treated. It was light locally in Santa Cruz County, CALIFORNIA.

ROSY APPLE APHID (*Anuraphis rosea*) was generally present in neglected apple orchards of RHODE ISLAND as small infestations; it was not a big problem in commercial orchards. There were no serious infestations observed in NEW JERSEY apple orchards, and infestations were normal in VIRGINIA. This aphid developed in a few orchards in GEORGIA where growers either failed to apply a dormant spray or failed to use a control material during the pink period; some losses were reported. Rosy apple aphid was generally light in OHIO and INDIANA; no trouble was experienced in MISSOURI. In COLORADO, rosy apple aphid was abundant early in the year on apples in Mesa County and in some parts of Delta County, but it was controlled with some of the newer aphicides with little loss of fruit. The loss in Colorado was estimated at 1-2 percent. Rosy apple aphid was more abundant and more damaging in UTAH than normal; however, the statewide numbers and/or injuries were approximately normal for Utah. Populations were up in NEVADA over previous years but with some heavy infestations occurring in late May. Varied populations of rosy apple aphid were noted on apples in Santa Cruz and Fresno Counties, CALIFORNIA.

WOOLLY APPLE APHID (Eriosoma lanigerum) aerial colonies were present in limited outbreaks in the Vincennes area of INDIANA, and this species was unusually heavy on apple trees in healyards in ARKANSAS. It appears to be on the increase in most northern KANSAS orchards, but was about normal for the year in UTAH. Woolly apple aphid infestations were light to heavy and a problem in NEW MEXICO, especially in northern counties, and light to medium populations were present in scattered apple-growing areas of CALIFORNIA. This species persists on pyracantha shrubs in most locations throughout California and thus is present for infesting apples. Newly developing commercial apple orchards in Coosa and Tallapoosa Counties, ALABAMA, experienced somewhat of a mild outbreak and damage by woolly apple aphid.

APHIDS, chiefly APPLE GRAIN APHID (Rhopalosiphum fitchii), were a problem on apples in MINNESOTA until blooming stage. Apple grain aphid was abundant in COLORADO in April and May (20-30 per leaf with Aphis pomi), with controls necessary on bearing and nonbearing apple trees. GREEN PEACH APHID (Myzus persicae) was present on pears in CALIFORNIA in many locations.

PEAR PSYLLA (Psylla pyricola) was more injurious to pear trees and fruit in WASHINGTON and more costly to control than it had been since 1957 in the central area. Phosphate-insecticide resistance continued to spread, chlorinated hydrocarbons did not do so well as hoped and some growers had to use nicotine-oil sprays. However, postharvest sprays reduced overwintering populations to normal levels. Moderate to heavy infestations also occurred in northwestern and southeastern Washington localities. This psyllid was satisfactorily controlled in Jackson and Hood River Counties of OREGON. Some insecticidal resistance apparently developed in the former area. September infestations in Lane County resulted in considerable pear injury. Egg laying was in progress by March 1 and on May 25 the first-generation adults were emerging and depositing eggs. In CALIFORNIA, many light infestations developed on pear trees; this has not become a pest in the southern part of the State. Infestations were found in RHODE ISLAND in Exeter, Washington County, on June 5 and in Scituate, Providence County, on September 20. Pear psylla was more in evidence in 1963 in NEW YORK than in recent years. It is not known whether favorable conditions, poorly applied control measures or resistance were responsible for the increases.

APPLE MEALYBUG (Phenacoccus aceris) population levels continue low in MAINE except for 2 minor "hot spots" in the southern area. No problems are anticipated there if the pest follows its past cyclic patterns. Infestations in VERMONT were completely controlled by air dust program.

SAN JOSE SCALE (Aspidiotus perniciosus) was heavy on apple trees in Warwick, Kent County, RHODE ISLAND, on August 4 and in Sauderstown, Washington County, on September 5. In OREGON, this scale insect was abundant on pear trees in Jackson County; crawlers began emerging June 10. FORBES SCALE (Aspidiotus forbesi) infestations continued to be light in most orchards in INDIANA in the Vincennes area, Knox County; these were much lighter than 12 years ago.

Brood XXIII of PERIODICAL CICADAS, with a 13-year life cycle, emerged in 1963 in INDIANA. The major portion of the adults was comprised of individuals of 2 species, Magicicada tredecim and M. tredecassini; however, a small number of M. tredecula helped comprise the brood. A partial survey of apple and peach orchards where emergence occurred in 14 orchards in Sullivan, Knox, Gibson and Vanderburgh Counties showed that these species covered 400 acres of apples.

APPLE LEAFHOPPER (Empoasca maligna) was approximately normal in numbers and/or injury in UTAH. It was more abundant in PENNSYLVANIA than in 1962, and it caused severe leaf injury in some poorly sprayed orchards. WHITE APPLE LEAFHOPPER (Typhlocyba pomaria) built up on unsprayed apples in RHODE ISLAND in Kingston, Washington County, in mid-June, but not in commercial orchards. BUFFALO TREEHOPPER (Stictocephala bubalus) increased to usual outbreaks in VERMONT. A TREEHOPPER (Stictocephala sp.) was light on pear trees locally in Stanislaus County, CALIFORNIA. PLANT BUGS apparently injured a number of crab apple fruits in ALASKA.

APPLE MAGGOT (Rhagoletis pomonella) problems on apples in MICHIGAN were relatively fewer than those on blueberries. Some late-season injury on processing apples was noted, particularly where growers stopped spraying in mid-August. Adults emerged at Wooster, Wayne County, OHIO, from July 3 to September 3 with a peak the last week of July. There were many reports of injury to home plantings, and few commercial orchards had above average infestations late in the summer. There were no observations of this apple pest in INDIANA in the Knox County area. Apple maggot was again prevalent in ILLINOIS and some commercial orchards were invaded from nearby sources of infestation. This fruit fly was a prime fruit pest because of the continued warm-weather conditions. Adults emerged a week earlier in 1963. Control was excellent in well-maintained commercial orchards with complete spray programs, but it was a problem in backyard orchards. Apple maggot caused damage to apples in Butler County, NEBRASKA.

Apple maggot emergence in MAINE began July 7 in the Monmouth area, Kennebec County; peaked July 19; and reached the 99 percent emergence level by August 12. The last fly recovered was taken on August 29. No control difficulties were encountered in commercial orchards. Initial emergence was a bit later than normal, but peak emergence was reached quickly and the flight slowed down more rapidly than usual. Although it is not unusual, apple maggot adults were seen in CONNECTICUT as late as October 2. The first adults in RHODE ISLAND were noted in Exeter, Washington County, July 2. This is the insect home-fruit growers find the most difficult to control because their zeal for garden work abates at petal fall. Adult emergence in Poughkeepsie, NEW YORK, began June 16 this season and increased steadily after June 18. In Niagara County, 4 males and 2 females were taken from emergence cages June 20. The first emergence in Niagara County occurred June 20 compared with June 26 at the same location in 1962. The first adult taken at Geneva, New York, from cages was on July 1. Apple maggot was more of a problem on apples in 1963 than it was in 1962; several good commercial growers had difficulty controlling it. These "problem" orchards were located in areas where abandoned trees were numerous and served as a source of reinfestation. This fruit fly was a problem in many of the smaller orchards in PENNSYLVANIA where late sprays were omitted. Apple maggot caused minor damage in one SOUTH CAROLINA orchard in September. Young trees bearing for the first time did not receive full spray schedule.

PEAR-SLUG (Caliroa cerasi) was light on pear in Fresno and Siskiyou Counties, CALIFORNIA. Infestations and damage were above normal in NEVADA but slightly less than in 1962. In UTAH, this sawfly was below average in numbers or importance during the season. There was evidence of activity in RHODE ISLAND at Riverside, Providence County, in mid-June but it was apparently lighter than usual. EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) was somewhat more abundant in western MASSACHUSETTS and there was a noticeable increase in eastern Massachusetts but infestations were noneconomic. APPLE SEED CHALCID (Torymus druparum) damage was observed in MINNESOTA in mid-July in a couple of commercial orchards with proper sanitation and spray programs. Until the summer of 1963, this pest had been of minor economic importance.

PLUM CURCULIO (Conotrachelus nenuphar) was present in extremely small numbers in MISSOURI and posed no problems on apples. This weevil also caused lighter than average injury on apples in Vincennes area, Knox County, INDIANA, even on unsprayed trees. Overwintering adult population seems to have been reduced by extremely low temperatures encountered in January. Some apple orchards in OHIO experienced noticeable but minor amounts of injury; serious injury occurred on unsprayed trees. Plum curculio was very difficult to find in commercial apple orchards of NEW JERSEY although observations in unsprayed orchards indicated that populations remained at high levels. This insect was light again in commercially sprayed orchards in MARYLAND but damaged apples were common on unsprayed trees at several localities over the State. This pest poses a problem to the Bartlett pear industry in SOUTH CAROLINA. Young pears were heavily damaged at Spartanburg, Spartanburg County. Other beetles on apples included JAPANESE BEETLE (Popillia japonica) which was troublesome in a few orchards in OHIO; CALIFORNIA PRIONUS (Prionus californicus) larvae boring in roots of one apple tree in the Yakima Valley of WASHINGTON; and injury by adults of LOCUST LEAF MINER (Xenochalepus dorsalis) to apple foliage in MARYLAND at Hancock, Washington County. This last named leaf beetle caused considerable injury to trees next to wooded areas.

STONE FRUIT INSECTS

Highlights:

PEACH TREE BORER is the number one peach insect problem in Georgia, and it continued to cause considerable damage in many orchards. The borer was also a problem in the sandhills area of North Carolina and in Alabama, but Eastern and Midwestern States reported little damage. LESSER PEACH TREE BORER continued difficult to control in New Jersey and it was a major pest in eastern Virginia and in Michigan. Winter-injured trees were also damaged by lesser peach tree borer in Maryland, Georgia, Indiana and Missouri, as well as other States. ORIENTAL FRUIT MOTH was evident on abandoned or poorly sprayed peach orchards in several States, but was not a problem where controls were applied properly. WHITE PEACH SCALE was severe in several areas of Florida and was troublesome in parts of Georgia, Alabama and Texas, and SAN JOSE SCALE infestations were common in Alabama and sections of Texas and Oregon. Cherry trees were damaged by BLACK CHERRY APHID in the Willamette Valley and in southern Oregon during May and June. PLUM CURCULIO did not appear to be of great importance in 1963.

PEACH TREE BORER (Sanninoidea exitiosa) is the number one peach problem in GEORGIA. Infestations were heavier than in 1962 and it continues to cause considerable damage in many peach orchards. In north central FLORIDA, this pest was present in normal numbers but it was kept in control by the recommended spray program on paaches. There were no marked changes noted in populations in SOUTH CAROLINA, and peach tree borer continued important in ALABAMA. This aegeriid moth continues to be an important pest of peaches in the sandhills area of NORTH CAROLINA. It seriously injured 1,000 two-year-old, budded peaches during the first week of March in Wake County; as many as 13 larvae were recovered from a single small tree. Injury was extremely light in VIRGINIA. Some orchardists reported damage in MARYLAND in the Hancock area, Washington County, where spray programs had been greately reduced. Some increase, partly due to severe winter injury, was noted in PENNSYLVANIA. Peach tree borer was present in NEW

JERSEY in substantial numbers in abandoned and poorly sprayed peach orchards but it was not a problem with commercial growers. Most peach pests were very light in NEW YORK; there were a few light to moderate infestations of peach tree borer in orchards where control was neglected. Adults were observed emerging from a peach tree in Dane County, WISCONSIN, during early June. This was a relatively unimportant pest in INDIANA in the Knox County area.

LESSER PEACH TREE BORER (Synanthedon picitpes) damaged a block of 10-year-old Montmorence cherries in NEW YORK. Some trees failed to leaf in the spring, some declined quickly with mature fruit still hanging. Injury was extensive but there were few cases of complete girdling. This is the first record of severe injury to sour cherries in New York. Evidence indicates that a considerable proportion of larvae attacking cherry trees required 2 years for development and that cherry trees lack recuperative vigor of peach trees and succumb to lighter infestations. Lesser peach tree borer continues to be the most difficult insect to control on peaches in NEW JERSEY. Some increases were noted in PENNSYLVANIA where winter injury occurred. Damage in MARYLAND was confined to a few isolated orchards in Washington County. This aegeriid moth continued to be a major pest in eastern VIRGINIA; medium to heavy infestations were present in many orchards and a number of trees were killed. Infestations were rather heavy in some GEORGIA peach orchards, although the general infestation was somewhat lighter than that of 1962 when there was more winter injury and more dead and dying trees.

Lesser peach tree borer larval injury continued to be a major problem on peach and cherry trees in MICHIGAN. Borers were generally present in most peach orchards in OHIO with heavy infestations noted in a few instances. Lesser peach tree borer caused moderate to severe injury in a large number of orchards in INDIANA, especially where winter injury was present in the Knox County area. This insect caused concern in southeastern MISSOURI by infesting winter-damaged peach trees.

WESTERN PEACH TREE BORER (Sanninoidea exitiosa graefi) infestations in peach were light in Riverside, Santa Clara and Merced Counties, CALIFORNIA. Sanninoidea sp. was a problem on peach trees in NEW MEXICO which were weakened by extremely cold weather during the winter of 1961-62 in Farmington-Aztec area, San Juan County. Good control was obtained on young trees in Valencia County which were found to be heavily infested the summer of 1962.

ORIENTAL FRUIT MOTH (Grapholitha molesta) was generally inconspicuous in RHODE ISLAND but there was some evidence of early feeding in Riverside, Providence County. This olethreutid moth was present in NEW JERSEY in substantial numbers in abandoned or poorly sprayed peach orchards but it was not a problem with commercial growers. It was also a problem in PENNSYLVANIA under similar circumstances in peach orchards. Infested peaches in several areas over MARYLAND were especially heavy on unsprayed trees. Larvae were also responsible for killing the shoots of young peach trees in Charles County. Injury was extremely light in VIRGINIA during 1963. Infestations were somewhat lighter in 1963 than in 1962 or that of an average year in GEORGIA.

Oriental fruit moth was variable over ARKANSAS with light to heavy infestations recorded. It caused little first-generation injury in KANSAS, although terminal injury was very noticeable in the season in some orchards. Injured peach terminals in MISSOURI were noted in unsprayed orchards in the early season but since most of the peach crop froze in May, little fruit damage was recorded in the State. Injury to terminals of peach was heavier than usual in numerous orchards in the Knox County area of INDIANA. No insecticides were applied to the trees; there was no commercial crop of peaches in that area because of the low January temperatures. Terminal injury was very noticeable in OHIO later in the season in some orchards.

Oriental fruit moth populations in OREGON were almost zero; the only known infested area is at Salem in the northwest part of the State. Varied populations were noted in many separate locations in CALIFORNIA. This pest was prevalent and required more control than it had for several years in that State.

CHERRY FRUITWORM (Grapholitha packardi) damage in OHIO could not be evaluated owing to severe bird damage to cherries. Birds ate both "worms" and cherries and reduced crops in small plantings. In UTAH, this pest was approximately normal in numbers and/or injury.

PEACH TWIG BORER (Anarsia lineatella) sprays were posted early in COLORADO to protect the beneficial predators and parasites that were present in peach orchards. The peach crop was seriously affected by the cold winter temperatures. Emphases were placed on this gelechiid moth, green peach aphid (Myzus persicae) and several species of lygus bugs (Lygus spp.). Peach-producing areas of Montrose, Delta and Garfield Counties had no peach crop at all. Only 1,100 acres out of 4,920 acres had fruit in Mesa County. Insecticides used later in the season kept injury to the fruits at a minimum 3-5 percent. Peach twig borer was more abundant and/or more damaging than normal in UTAH, and was very prevalent in CALIFORNIA where it attacked peach, apricot, nectarine, plum and prune throughout the State.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) attacked seedling plantings of peach in nurseries and orchards in FLORIDA. Borers girdled young plants with killing of 10-15 percent of the peach seedlings in the Gainesville area, Alachua County, and 20-30 percent of the nursery plants in central Florida. Symptoms in the form of yellowing and wilting appeared in May which is too late to do anything about it.

Several other lepidopterous pests of stone fruits were reported in 1963. CARPENTERWORM (Prionoxystus robiniae) was medium on peaches in Selma, Fresno County, CALIFORNIA, and RED-HUMPED CATERPILLAR (Schizura concinna) was a pest on prunes and plums in a few locations in northern parts of that same State. Also in California, AMERICAN PLUM BORER (Euzophera semifuneralis) caused some damage to newly budded deciduous fruit trees in several locations and damaged some fruit. This last named species became a moderate local problem in TEXAS on plum trees in Bastrop County. LEAF CRUMPLER (Acrobasis indiginella) caused concern in Wharton, Kaufman and Dallas Counties, Texas, by boring into plum twigs and destroying terminals, and a LYCAENID BUTTERFLY (Strymon sp.) heavily damaged plums in Caldwell County, Texas.

WHITE PEACH SCALE (Pseudaulacaspis pentagona) infestations were severe in several areas in FLORIDA. Many crawlers and second-stage immatures were present about mid-October. With the accelerated planting of improved peach varieties, a well-planned spray program becomes more urgent to growers if losses are to be minimized from this scale and other insect pests. White peach scale is still quite abundant in GEORGIA peach orchards at Barney, Brooks County, and it has caused considerable damage in some orchards at that locality. Thus far, summer sprays have proved ineffective against this armored scale in Georgia. SAN JOSE SCALE (Aspidiotus perniciosus) and white peach scale were prominent pests to fruit trees in ALABAMA. White peach scale was abundant in TEXAS on peaches in Montgomery County and in lesser numbers in the central, northeast and north central areas of the State. Also in Texas, San Jose scale infestations were common on peach trees in the central and north central areas and appeared heavier than those of 1962. San Jose scale was abundant on peach trees in OREGON in Jackson County. Crawlers began activity June 10. San Jose scale was kept under control in north central FLORIDA by the recommended spray program for peaches.

In CALIFORNIA, several armored scales were recorded on stone fruits. A single new infestation of HALL SCALE (Nilotaspis halli) was found in an isolated area in a canyon ranch in Chico, Butte County; host eradication was complete and no additional infestations were found. OLIVE SCALE (Parlatoria oleae) was heavy locally on Placer County plums. HOWARD SCALE (Aspidiotus howardi) and PUTNAM SCALE (A. ancylus) were light on apricots in the Hemet area, Riverside County.

TERRAPIN SCALE (Lecanium nigrofasciatum) caused heavy injury to 10 peach trees in Baltimore, MARYLAND, during the spring. Infestations of BROWN SOFT SCALE (Coccus hesperidum) occurred on prunes in Santa Clara County, CALIFORNIA.

CATFACING INSECTS attacked peaches and plums in moderate numbers generally throughout TEXAS. In GEORGIA, deformed and gnarled peaches caused by COREID BUGS and STINK BUGS were not abundant in 1963. In some cases, this was due to special sprays in the season for stink bugs and TARNISHED PLANT BUG (Lygus lineolaris). Very extensive catfacing of peaches in Warwick, Kent County, RHODE ISLAND, was probably due to tarnished plant bug.

A LEAFHOPPER (Homalodisca insolita), a proven vector of phony peach disease, was reported farther south in FLORIDA than in any previous year. It is now being found at least as far south as the mouth of the Manatee River in the Bradenton area.

BLACK CHERRY APHID (Myzus cerasi) continued troublesome in OREGON during May and June on cherry trees in the Willamette Valley and in southern Oregon. Spraying and dusting operations were necessary in Marion and Polk Counties to check serious damage. This aphid was prevalent on untreated trees in MONTANA and it was approximately normal in numbers and/or injury in UTAH. In COLORADO, black cherry aphid ranged light to moderate, 4-10 colonies per cherry tree, with controls needed. The severe winter in that State caused a total loss of the sweet cherry crop; the sour cherry crop was not so seriously affected and there were fair crops in most areas. There was a heavy migration of aphids in the fall back to sour cherries in Colorado and controls were applied by most growers. Black cherry aphid threatened cherries in WISCONSIN in Door County early in the season but populations apparently dwindled.

Other APHIDS were not particularly damaging to stone fruits except Anuraphis helichrysi in NEW MEXICO where heavy infestations damaged foliage of plum trees in Rio Arriba and Sandoval Counties. A. helichrysi was also noted on plum trees in yards in Las Cruces area, Dona Ana County. MEALY PLUM APHID (Hyalopterus pruni) was spotty to heavy in Napa and Tehama Counties, CALIFORNIA. Elsewhere in that State, GREEN PEACH APHID (Myzus persicae) was present in many locations. Overwintering counts of green peach aphid in COLORADO showed light to moderate populations which were fairly easy to keep under control where a spray program was used. The estimated loss on peaches was zero to 2 percent in the State.

PERIODICAL CICADAS (Magicicada spp.) covered 225 acres of peaches in INDIANA in Sullivan, Knox, Gibson and Vanderburgh Counties as shown from partial survey of 14 orchards.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) built up to high numbers in COLORADO during August and it became quite a problem; peach growers who used controls reported poor to fair results using the latest acaricides. These results parallel the experience of the pear and apple growers and show the need for more mite studies. Damaging populations increased in prune plantings in southwestern MICHIGAN in August. Statewide injury was comparable with other years.

A SPIDER MITE (Tetranychus mcdanieli) became resistant to 2 specific acaricides on prunes in WASHINGTON where it was particularly difficult to control on this crop in the Yakima area. Hot, dry weather during August and September was very favorable for rapid development and subsequent damage to tree fruits in central Washington. Light, local infestations of PACIFIC SPIDER MITE (T. pacificus) occurred on peaches in Los Angeles County, CALIFORNIA.

EUROPEAN RED MITE (Panonychus ulmi) was a serious problem in some NEW JERSEY peach orchards. In PENNSYLVANIA, control of mites, particularly P. ulmi, was one of the most persistent problems on peaches. European red mite was more abundant on peaches in WASHINGTON than it had been for 10 years.

A FRUIT-TREE MITE (Bryobia rubrioculus) was of little importance in COLORADO on peaches during the 1963 season. Unspecified MITES caused less damage than usual in SOUTH CAROLINA, but were locally heavy. PEACH SILVER MITE (Aculus cornutus) was present on peaches and nectarines in a few CALIFORNIA locations. It caused local bud damage to nectarine trees at blossomtime for the first time in Sacramento, Sacramento County. Two eriophyid mites were reported from MONTANA. Eriophyes sp. appeared on plums and PLUM RUST MITE (Aculus fockeui) was present on both plums and cherries. Injury by A. fockeui was severe on untreated trees.

PLUM CURCULIO (Conotrachelus nenuphar) was present in substantial numbers in abandoned or poorly sprayed NEW JERSEY peach orchards but it was not a problem with commercial growers. This weevil was again light in commercially sprayed orchards of MARYLAND, but damage to peaches was common on unsprayed trees at several localities over the State. Plum curculio was first observed in the sandhills of NORTH CAROLINA on April 1 and second-generation weevils were first observed in that peach-growing area on June 17. Damage to peaches in SOUTH CAROLINA was about the same as in past years, and the pest continued of importance during the year in ALABAMA. Infestations in peaches in GEORGIA were very light throughout the season and it was much less than that of an average year; this condition was also true for the past 3 years. Plum curculio was practically absent in some peach orchards and the general infestation was the lightest reported in more than 40 years. New insecticides and more efficient spraying equipment together with better spray schedules are largely responsible for the reduced infestations in Georgia. Plum curculio was kept under control in FLORIDA by the recommended spray program. The first larvae to leave plum fruit in OHIO occurred at Wooster, Wayne County, on June 18; summer-brood adults began emergence in mid-July. Plum curculio was extremely small in numbers in MISSOURI and posed no problems on peaches. This weevil was heavy on untreated plums in the southern area of LOUISIANA in May; many larvae entered soil to pupate at that time. Plum curculio was light to moderate on peaches in TEXAS; another WEEVIL (Pandeleteius cinereus) caused moderate, local damage to apricots in Mason County area of Texas.

SHOT-HOLE BORER (Scolytus rugulosus) was, as usual, prevalent in devitalized, weak or diseased trees in neglected orchards in GEORGIA; it was also heavy in orchards with dying trees. Injury was more prevalent than usual in peach orchards in INDIANA in the Vincennes area, Knox County, but the degree of injury present is not considered to be of consequence since it was present where trees were weakened by winter injury. A buildup appeared also in NEW MEXICO in peach trees killed by the cold winter of 1961-62 in San Juan County; attack on healthy trees began during the summer months in 1963. Shot-hole borer was more abundant and/or more damaging than normal in UTAH. Spotted infestations were noted on deciduous fruit trees in CALIFORNIA in San Joaquin, Tehama and Fresno Counties.

TEN-LINED JUNE BEETLE (Polyphylla decemlineata) larvae damaged roots of young cherry trees in the Yakima Valley of WASHINGTON, and JAPANESE BEETLE (Popillia japonica) caused severe defoliation on plums and cherries in some areas of OHIO.

An unusual occurence of larvae of CALIFORNIA PRIONUS (Prionus californicus) boring in the roots of one sweet cherry tree in the Yakima Valley of WASHINGTON was noted. A similar record was obtained on sweet cherry at Clarkston, Asotin County, in 1959.

CHERRY FRUIT FLY (Rhagoletis cingulata cingulata) damage in OHIO could not be evaluated owing to severe bird damage to cherries. Birds ate both "worms" and cherries and roduced crops in small plantings. Emergence of the western subspecies, R. c. indifferens in OREGON occurred May 23 at The Dalles, Wasco County; May 27 in Jackson County; and June 1 in the Willamette Valley. Some losses were experienced in Willamette Valley where some sprays were washed off by incessant rains. In MONTANA, this western subspecies was general throughout the cherry-growing areas of the State as was also BLACK CHERRY FRUIT FLY (R. fausta). Both cherry fruit fly and black cherry fruit fly emerged in a normal pattern and they were easily controlled in sprayed plantings in NEW YORK.

Infestations of other cherry pests were quite light in 1963. WALNUT HUSK FLY (Rhagoletis completa) attacked peaches in UTAH at Brigham City, Box Elder County. Numbers and/or injury were approximately normal statewide.

GENERAL DECIDUOUS FRUIT INSECTS

SAN JOSE SCALE (Aspidiotus perniciosus) crawlers have extended over unusually long periods in WASHINGTON because of the cool weather the past two seasons. In CALIFORNIA, general to heavy infestations were noted in deciduous fruit orchards from Kern County northward. San Jose scale appeared to be a minor problem in NEW MEXICO for fruit growers this past season except in orchards where no effort was made to control this scale insect. In several poorly managed orchards in ILLINOIS, San Jose scale became quite numerous and encrusted some branches. It also appeared on the fruit in a few orchards where other pests were well controlled. Infestations continued light in most orchards in INDIANA, much lighter than 12 years ago, but a heavy infestation in a small, isolated orchard near Vincennes, Knox County, has not been readily controlled the past 2 seasons with the control measures generally recommended. Reasons for increase in this orchard are not apparent. The general infestation in GEORGIA was a little heavier than that of the last 4 years during which it was less than that of an average years. The phosphate sprays used during the growing season are keeping this scale insect under control.

OYSTERSHELL SCALE (Lepidosaphes ulmi) is showing some resurgence in scattered locations in MAINE; severe infestations were reported from 2 locations. Oystershell scale was present in MONTANA on untreated trees in Flathead, Lake, Missoula and Ravalli Counties. Varied infestations of OLIVE SCALE (Parlatoria oleae) were noted on deciduous fruits in the San Joaquin Valley of CALIFORNIA. A SOFT SCALE (Lecanium kunoensis) infested some deciduous trees in Paradise, Butte County. This has not become a serious pest of fruit trees in California. GLOBOSE SCALE (Lecanium prunastri) was reported several times in PENNSYLVANIA.

APHIDS in general were present over a longer period than normal in CALIFORNIA and some species persisted all year; deciduous fruit trees were affected. BLACK PEACH APHID (Anuraphis persicaeniger) was below average in numbers or importance in UTAH this season. Heavy populations of APPLE GRAIN APHID (Rhopalosiphum fitchii) were on buds in the spring in OHIO. Winged migrants and nymphs were quite abundant in the autumn. Both ROSY APPLE APHID (Anuraphis rosea) and APPLE APHID (Aphis pomi) were extremely scarce in SOUTH CAROLINA this season.

TARNISHED PLANT BUG (Lygus lineolaris) caused minor injury to fruits in a few VIRGINIA Piedmont orchards. PLANT BUG injury in PENNSYLVANIA was at a minimum. PERIODICAL CIADAS (Magicicada spp.) emerged in great numbers in a restricted area in southeastern MISSOURI near Cape Girardeau. Damage to orchards was minimized by spraying. LEAFHOPPERS developed extensively in GEORGIA in orchards with limited spray programs because of frost damage on young trees. The pest population was greater than had developed in 10 years and caused stunting of trees. Leafhopper damage was severe on buds and unsprayed young trees in SOUTH CAROLINA; damage was noted as early as May 1.

TWO-SPOTTED SPIDER MITE (Tetranychus telarius) increased to unusual outbreaks in VERMONT in some areas. Drought conditions in August caused migration from orchard cover to trees. In general, fruit pests were not troublesome in NEW HAMPSHIRE with the exception of locally high populations of two-spotted spider mite which built up rapidly in August. Two-spotted spider mite was not a problem on tree fruits in NEW JERSEY, of minor importance in NEW YORK, and generally very light in OHIO.

EUROPEAN RED MITE (Panonychus ulmi) was the most severe fruit pest in MICHIGAN in 1963. A rather general buildup in fruit areas was evident in early July. Oil sprays used in some orchards in the prebloom period controlled mites until they started to build up again in midsummer. Commercial orchardists obtained reasonably good control with spray programs. European red mite was reasonably well controlled in ILLINOIS where growers have learned control practices. This species caused more damage in MARYLAND than did Tetranychus spp. Females of European red mite were observed in MAINE about June 3 which was about one week earlier than usual. Very few eggs were seen on that date but oviposition increased rapidly by Juen 10. Hot and dry conditions favored mite buildup; peak populations were reached by mid-July as indicated by untreated foliage sampling. Numbers of European red mite began decreasing by mid-July and early August. The normal seasonal cycle in Maine usually finds populations increasing during that period. Five generations, and a partial sixth, were observed; this is one more generation than average. This spider mite caused a severe problem throughout the State where control measures were not tight. Light to medium populations were found in CALIFORNIA on deciduous fruits in Santa Clara, Merced, Eldorado, Sacramento and Placer Counties. SPIDER MITES were not a problem in commercial orchards of RHODE ISLAND, but they could be found without difficulty on unsprayed trees. Spider mites were the major fruit pests in MARYLAND in 1963. Tetranychus spp. complex began to build up in July in MISSOURI and in a few orchards got out of control causing considerable damage; however, most orchardists maintained excellent control. FOUR-SPOTTED SPIDER MITE (Tetranychus canadensis) and T. telarius became problems earlier than usual in ILLINOIS. Varied populations of a FRUIT-TREE MITE (Bryobia rubrioculus) infested fruits from January through June in CALIFORNIA. MITES in GEORGIA were not usually abundant in 1963 and there were very few cases where control measures were reported.

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) larvae began appearing in Door County, WISCONSIN, the second week of May and the first adults began flying in the Gays Mills area, Crawford County, May 29. Peak was reached on June 30 and the last moth was caught in the area on July 8. Populations in Wisconsin were considerably lower than in 1962. Low numbers appeared in many southwestern ILLINOIS orchards but there was little damage. A heavy first brood occurred in late April and early May in MISSOURI but it was easily controlled in commercial orchards.

ORANGE TORTRIX (Argyrotaenia citrana) was a pest of considerable importance in CALIFORNIA on deciduous fruits over the State most of the year. EASTERN TENT CATERPILLAR (Malacosoma americanum) was widely distributed in the central part of TEXAS; infestations were about equal to those of 1962. It was quite destructive in some areas. FALL WEBWORM (Hyphantria cunea) infestations were common in OKLAHOMA but not so damaging as in 1962. In OREGON, infestations were light compared with previous years in the Willamette Valley. Also in Oregon, a GEOMETRID MOTH (Operophtera occidentalis) continues to cause damage to orchards in the spring in the Willamette Valley.

PLUM CURCULIO (Conotrachelus nenuphar) showed no departure from normal levels in MAINE in spite of more than adequate snow cover during the winter of 1962-63. There were no reports of injury in commercial orchards and only 17 percent damage to fruits under a spray program in petal fall and first cover in a trial orchard. Plum curculio was first noted in the Kingston area, Washington County, RHODE ISLAND, May 21. It was present in moderate numbers into early June. Control was good in commercial orchards. Although plum curculio was generally below normal in PENNSYLVANIA, this weevil tended to become a problem in some interplanted orchards. Injury by this species was extremely light in VIRGINIA in 1963. It was well controlled in ILLINOIS most of the season. Plum curculio caused no damage in 1963 in KANSAS.

NUT CROP INSECTS

Highlights:

PECAN NUT CASEBEARER was light in the Southeast; heaviest infestations were reported in the Southwest. HICKORY SHUCKWORM infestations prior to harvest were the highest recorded in Florida for a number of years; and the pest was extremely heavy in Alabama, but it failed to inflict the damage that sometimes develops in that State. Several species of APHIDS and MITES were troublesome to nut orchards in several States, and in some cases treatments were required. WALNUT HUSK FLY was found in Oregon for the first time, and the fly extended its range into some new areas of northern California.

PECAN NUT CASEBEARER (Acrobasis caryae) damage was held to a minimum by home-owners in Carlsbad area, NEW MEXICO, by treating pecan trees at regular intervals. The infestation does not seem to have spread beyond the city limits of Carlsbad, Eddy County. Pecan nut casebearer appeared about 10 days later than expected in TEXAS. First-generation larvae were extremely erratic and most damage was done by the second and third generations. Damage was moderate to heavy throughout the pecan-producing areas of OKLAHOMA; it was active from late April through August. Pecan nut casebearer was light throughout GEORGIA on pecans, and it did not develop to be the serious pest it is capable of being in years of light production in ALABAMA. PECAN LEAF CASEBEARER(Acrobasis juglandis) heavily damaged pecan trees at 2 locations on the lower Eastern Shore of MARYLAND. Infestations in GEORGIA caused little defoliation to the newly emerging leaves.

FILBERTWORM (Melissopus latiferreanus) moths emerged July 6 in Lane County, OREGON. Daily moth counts in blacklight traps were much lower than in 1962. CODLING MOTH (Carpocapsa pomonella) was generally light on walnuts in CALIFORNIA.

HICKORY SHUCKWORM (Laspeyresia caryana) damage was evident in OKLAHOMA; activity began in mid-May. Light to moderate infestations were noted in several central and north central TEXAS counties. Hickory shuckworm infestations prior to harvest were the highest recorded in FLORIDA for a number of years. One report indicated that samples of nuts from 3 different orchards showed averages of 76 to 96 percent of the pecan shucks infested with larvae. Hickory shuckworm was extremely heavy in ALABAMA, but it failed to inflict the damage that sometimes develops.

PECAN BUD MOTH (Gretchena bolliana) was locally heavy on pecans in Houston County, GEORGIA. Pecan bud moth is rated as becoming more of a problem each year in FLORIDA where it feeds on and in young pecan nuts during the latter part of April.

FALL WEBWORM (Hyphantria cunea) defoliated nut and other deciduous trees throughout southern INDIANA; it was the most prevalent of any year previously observed. Numerous trees were stripped of all foliage during August. Infestations in TEXAS were about equal to those of 1962. Average-sized trees in some central counties supported up to 10 webs per tree. Infestations were light to heavy on pecans in GEORGIA with most infestations being light to moderate. Fall webworm was unusually severe in early summer on pecan foliage in FLORIDA.

HICKORY HORNED DEVIL (Citheronia regalis) infestations were light on pecan trees in Bibb County, GEORGIA.

A NOCTUID MOTH (Catocala sp.) generally occurred over the State of TEXAS.

Three lepidopterous pests of nut crops in CALIFORNIA included: PEACH TWIG BORER (Anarsia lineatella) and WESTERN PEACH TREE BORER (Sanninoidea exitiosa graefi) which were pests of almonds (the former species was very prevalent statewide and the latter caused light infestations in Riverside, Santa Clara and Merced Counties); RED-HUMPED CATERPILLAR (Schizura concinna) was a pest of walnuts in a few northern California locations.

PECAN APHIDS were approximately normal in numbers and/or injury in UTAH. Myzocallis caryaefoliae was a problem on peach trees in Dona Ana, Sierra and Eddy Counties, NEW MEXICO, with treatments required in most areas. Monellia sp. was moderate to heavy in late September and August in TEXAS, being considerably more numerous than it was in 1962. Also in Texas, moderate to heavy infestations of BLACK PECAN APHID (Melanocallis caryaefoliae) appeared in late September and August and was more numerous than in 1962. This last named aphid was medium on pecans in Fresno, Fresno County, and locally in Sacramento, Sacramento County, CALIFORNIA. BLACK-MARGINED APHID (Monellia costalis) was a problem on pecan trees in Dona Ana, Sierra and Eddy Counties, NEW MEXICO; treatment was required in most areas. WALNUT APHID (Chromaphis juglandicola) was approximately normal in numbers and/or injury in UTAH. In CALIFORNIA, this species was light to medium on walnuts generally; a few locally heavy populations developed. GREEN PEACH APHID (Myzus persicae) was present on almonds in many California locations. Pecan growers in ALABAMA experienced one of the most serious infestations of black pecan aphid and other yellow aphids during 1963. Many orchards were defoliated prior to the maturity of nuts as a result of aphid damage along with untimely drought.

PECAN PHYLLOXERA (Phylloxera devastatrix) appears to be increasing each year in TEXAS; pecan trees in most areas supported light to heavy infestations.

BROWN SOFT SCALE (Coccus hesperidum) became a moderate problem in some north TEXAS counties.

Various MITES were problems on nut crops in CALIFORNIA. Light to medium infestations of EUROPEAN RED MITE (Panonychus ulmi) were noted in various locations in Santa Clara, Merced, El Dorado, Sacramento and Placer Counties. A FRUIT-TREE MITE (Bryobia rubrioculus) infested almonds and walnuts from January through June throughout northern California. TWO-SPOTTED SPIDER MITE (Tetranychus telarius) was locally heavy on walnuts in a few locations and PACIFIC SPIDER MITE (T. pacificus) was medium on almonds in Merced County. PEACH SILVER MITE (Aculus cornutus) was locally heavy on California's almonds late in the year.

CYCLAMEN MITE (Steneotarsonemus pallidus) infested filbert catkins for the first time in Marion County, OREGON. Tips of new catkins turned brown.

MITES caused noticeable defoliation of pecan trees in several areas during late August and early September in TEXAS.

WALNUT HUSK FLY (Rhagoletis completa) was found in OREGON for the first time. Backyard English and black walnuts in Medford, Jackson County; Nyssa, Malheur County; Hermeston and Milton-Freewater, Umatilla County; and Hood River, Hood River County, were infested. Populations were normal in southern CALIFORNIA but this fly extended its range into some new areas in northern California. Infestations in the northern part are established in several counties where damage was prevalent for the first time. Walnut husk fly was approximately normal statewide in UTAH. It attacked walnuts at Brigham City, Box Elder County. Traps in abandonded orchards indicated that a FRUIT FLY (R. sauvis) was abundant in OHIO in 1963 as it was in 1962.

PECAN WEEVIL (Curculio caryae) infestations in ARKANSAS varied from zero to as high as 40 percent of the nuts involved in various locations sampled over the State. In SOUTH CAROLINA, less than the usual amount of pecan weevil damage was reported. This was probably because of an unusually light crop preceding a heavy one. Also in South Carolina, unusually heavy damage by TWIG GIRDLER (Oncideres cingulata) was reported in the lower Coastal Plain and TWIG PRUNER (Elaphidion villosum) was reported in a number of cases where limbs of heavily loaded pecan trees were breaking. In FLORIDA, a WEEVIL (Conotrachelus aratus) moderately infested bearing pecan orchards in the Monticello area of Jefferson County.

A LEAF BEETLE (Syneta albida) occurred in increasing numbers in filbert orchards of Yamhill County, OREGON. Another leaf beetle (Anomoea mutabilis) was heavy on walnut and pecan trees in Throckmorton County, TEXAS, but no damage was noted. In Garza County, Texas, APPLE TWIG BORER (Amphicerus bicaudatus) damaged pecan twigs by feeding on growth just above the buds and axils.

A SAWFLY (Megaxyela langstoni) caused light, local damage to pecan foliage in De Witt and Travis Counties, TEXAS.

GRAPE INSECTS

GRAPE BERRY MOTH (Paralobesia viteana) larvae caused heavy damage to Concord grapes at Fallston, Harford County, MARYLAND, in September. This olethreutid was of no economic importance in OHIO vineyards; although the first brood was about normal, the second brood failed to develop. Inasmuch as 50 to 100 percent of the grape crop froze in MISSOURI, this pest was of little or no concern although an occasional vineyard which had a few grapes had to be sprayed once or twice to protect the fruit. Grape berry moth was approximately normal in numbers and/or injury in UTAH.

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) was slightly more numerous than grape berry moth in PENNSYLVANIA. No grape insects were important problems in the State.

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) was medium to heavy locally in Esconidido, San Diego County, CALIFORNIA; this pest is under eradication in Livermore, Alameda County. Western grape leaf skeletonizer continued to spread in NEVADA into uninfested areas of Las Vegas and North Las Vegas, Clark County. This pest was below average in numbers or importance this season in UTAH.

GRAPE ROOT BORER (Vitacea polistiformis) continues to be a serious pest of grapes in ARKANSAS especially in the northwest area. Some vineyards have been abandoned due to this pest. It also continues destructive in MISSOURI grape roots in all parts of the State where commercial grapes are grown.

A GRAPE TWIG BORER (Psoa quadrisignata) was reared from infested plants in WASHINGTON and LEAD-CABLE BORER (Scobicia declivis) damaged laterals and trunks of European grapes near Sunnyside, Yakima County.

SCARABS (Hoplia spp.) were locally light to heavy in grape plantings in CALIFORNIA at Merced, Mendocino, Fresno and Stanislaus Counties. JAPANESE BEETLE (Popillia japonica) was injurious to grapes in isolated areas only in OHIO. Adults were heavy on grape foliage in sections of eastern Queen Annes County, MARYLAND. A WEEVIL (Ampeloglypter ater), which infested grape growth, was destroyed by a freeze on May 23 in OHIO; only trace numbers occurred in the 1963 season. BLACK VINE WEEVIL (Brachyrhinus sulcatus) caused severe loss of grapes in WASHINGTON (up to 3.5 tons per acre) where not controlled. Dry winds in late August caused some grapevines to wilt and digging revealed root injury by larvae. A LEAF BEETLE (Glyptoscelis squamulata) was light to medium on grapes in Coachella, Riverside County, CALIFORNIA. GRAPE FLEA BEETLE (Altica chalybea) was a serious problem on scuppernong grapes in SOUTH CAROLINA and a serious problem in other bunch grape areas of the State.

GRAPE MEALYBUG (Pseudococcus maritimus) populations were much lower in WASHINGTON than they were in 1962. Pseudococcus spp. on grapes in MISSOURI were few in number and caused little concern. COTTONY MAPLE SCALE (Pulvinaria innumerabilis) was a serious pest of Concord grapes in the Yakima Valley of Washington; heaviest infestations were on downwind sides of shade trees around farm houses. First and second instars were found on the upper surfaces of leaves July 24 and caused much honeydew and sooty mold. GRAPE SCALE (Aspidiotus uvae) continued to be a problem in ARKANSAS.

LEAFHOPPERS were a problem on grapes in CALIFORNIA in several locations. Erythroneura spp. were generally light in many grape-growing areas. In NEVADA, Erythroneura spp. populations were again up in Clark and Nye Counties on grapes and equal to the 1961 levels. Heavy populations of a LYGAEID BUG (Nysius sp.) invaded grape vineyards in Stanislaus and San Diego Counties, CALIFORNIA, in local areas.

A SPIDER MITE (Eotetranychus willamettei) ranged light to medium on grapes in Amador County, CALIFORNIA. Elsewhere in that State, PACIFIC SPIDER MITE (Tetranychus pacificus) was medium on grapes in Merced County and GRAPE ERINEUM MITE (Eriophyes vitis) was medium on grapevines in Fresno County.

A GALL MIDGE (Lasioptera vitis) was largely killed in infested grape growth by a freeze on May 23 in OHIO; only trace numbers occurred during the season. VINEGAR FLIES (Drosophila spp.) did not produce heavy populations in grapes in Ohio. FRUIT FLIES were not nearly so numerous on grapes in SOUTH CAROLINA as in past years. A THRIPS (Drepanothrips reuteri) was light on grape plantings in Stanislaus County, CALIFORNIA.

GRASSHOPPERS caused some damage to grapevines in CALIFORNIA but all infestations were light where damage occurred.

BLUEBERRY, CRANBERRY, AND CURRANT INSECTS

Highlights:

BLUEBERRY MAGGOT injury was much more severe in Michigan than in recent years and it was more prevalent in New Jersey. Infestations of BLUEBERRY THRIPS continued to increase in size and number in the eastern blueberry-producing areas of Maine. CURRANT STEM GIRDLER was recorded in Washington for the first time. It was not previously known west of Montana in the United States.

BLUEBERRY MAGGOT (Rhagoletis pomonella) injury was much more severe in MICHIGAN than it was during other recent years. Timing of pesticide applications in relation to the residual action of the materials used and frequent rains during the critical treatment periods complicated controls. Blueberry maggot was more prevalent on blueberries in NEW JERSEY also. Emergence started on June 22 in MAINE in the Jonesboro area, Washington County. It reached a peak by June 26. The 99-percent level was achieved on July 10 and the last fly was taken on July 23. Only 2 adults (both male) were taken after July 16; for practical purposes, emergence was completed on that date.

One moderate infestation of a GALL MIDGE (Contarinia vaccinii) was observed in Orland, Hancock County, MAINE, where no blueberry thrips (Franklinella vaccinii) were taken. Populations of this gall midge usually are drastically reduced when new-burned fields are dusted for thrips control.

CURRANT BORER (Ramosia tipuliformis) emerged May 20 in the Yakima Valley of WASHGINTON and damaged 100-120 acres of currants. DOGWOOD BORER (Thamnosphecia scitula) was determined as the clearwing moth which was causing injury to blueberries in 1962 in MICHIGAN (cf. CEIR 13(10):207). Plantings in Van Buren, Allegan, Ottawa and Muskegon Counties were found infested in 1963. GOOSEBERRY FRUITWORM (Zophodia convolutella) was approximately normal in numbers and/or injury in UTAH. A GEOMETRID MOTH (Itame argillacearia) outbreak caused heavy defoliation in NEW HAMPSHIRE in over 40 acres of lowbush blueberries in Hillsborough County. VARIEGATED CUTWORM (Peridroma saucia) damaged currant plants the night of June 12 in Narragansett, Washington County, RHODE ISLAND, and a BLUEBERRY TIP BORER (Hendecaneura shawiana) infestations were prevalent on unsprayed plantings in OHIO.

CURRANT APHID (Capitophorus ribis) was approximately normal in numbers and/or injury in UTAH; and CURRANT APHIDS were numerous on cultivated currants near Seward, ALASKA, where they distorted the foliage severely. Nymphs of undetermined SPITTLEBUGS were common on blueberries in RHODE ISLAND at Richmond, Washington County, and Coventry, Kent County, in early July.

WESTERN RASPBERRY FRUITWORM (Byturus bakeri) was feeding on blossoms and buds of thimbleberry in northern Washington County, OREGON, in large numbers. This beetle has been collected for several years in northwestern counties but so far it has not infested commercial cranberries. PLUM CURCULIO (Conotrachelus nenuphar) was an important insect on blueberries in some areas of NORTH CAROLINA.

BLUEBERRY THRIPS (Franklinella vaccinii) infestations continue to increase in size and number in the eastern blueberry-producing areas of MAINE. As noted in 1962, this pest is becoming much more common east of the Penobscot River (Hancock and Washington Counties), whereas in the past it was usually troublesome in Waldo, Knox and Lincoln Counties. Several very heavy infestations were reported from the two eastern counties and some difficulty in achieving control was also noted.

CURRANT STEM GIRDLER (Janus intiger) was not previously known west of Montana. It had been taken in a currant planting near Grandview, Yakima County, WASHINGTON, in the lower Yakima Valley on May 24.

A CHALCID (Hemadas nubilipennis) was near normal levels in MAINE. Extremely high populations of MITES were observed on small fruits in MINNESOTA. In one case, a formerly effective acaricide of the chlorinated hydorcarbon group did not provide control of mites while a subsequent change to an organophosphate resulted in effective control.

AVOCADO INSECTS

Pests of avocado in CALIFORNIA included OMNIVORUS LOOPER (Sabulodes caberata) which was heavy in avocado trees in Los Angeles County; ORANGE TORTRIX (Argyrotaenia citrana) was a pest of considerable importance over the State most of the year; light to medium infestations of a LEAF ROLLER MOTH (Amorbia essigana) were noted locally in plantings in Orange and Los Angeles Counties; and another LEAF ROLLER MOTH (Platynota stultana) was a pest in a few locations.

An ARMORED SCALE (Aspidiotus lataniae) was light on avocado in San Luis Obispo County. Varying populations were noted in southern California also. THRIPS were prevalent statewide in California and avocados were affected heavily. AVOCADO BROWN MITE (Oligonychus punicae) was generally light on avocado in California; a few medium, local infestations were noted from June on to October. Biological control varied and treatments were applied when beneficial insects were unable to keep populations down.

MITES were prevalent on avocado in FLORIDA; WHITEFLIES and unspecified BAGWORMS were serious in midsummer in the Pahokee area, Palm Beach County, on avocado.

OLIVE INSECTS

BLACK SCALE (Saissetia oleae) was locally heavy on olive seedlings in Tehama County, CALIFORNIA; biological control is an important factor. OLIVE SCALE (Parlatoria oleae) varied on olives in the San Joaquin Valley of California and light, local infestations were noted on olives in Glenn County.

CITRUS INSECTS

Highlights:

CITRUS RUST MITE was the major problem in Florida citrus groves. High populations developed in July and continued high through the remainder of the year. Moderate to heavy infestations of this mite also occurred in Cameron County, Texas, and some areas required control measures. Record high levels of TEXAS CITRUS MITE were recorded during May and June in Florida, and some orchards maintained high levels during the fall. This mite was especially numerous in cold-damaged groves. MEDITERRANEAN FRUIT FLY invaded Florida for the fourth time during 1963. It was discovered in June near the Miami International Airport. An aggregate of 72,565 acres were treated, with the last application being made in October. Following a period of 90 fly-free days, State and Federal regulations were removed. ORANGE DOG larvae became a serious problem on Arizona citrus during the fall months, and WHITEFLIES reached the highest population level in 12 years of record during December in Florida. A number of SCALE INSECTS were reported from citrus in California, Texas and Florida. Some individual species warranted attention.

GLOVER SCALE (Lepidosaphes gloverii) was above normal on FLORIDA citrus groves which had less than 50 percent freeze defoliation due to the severe freeze in December, 1962. Populations were reduced greatly on freeze-damaged groves at the first of the year. Glover scale increased to above average levels in both damaged and undamaged groves in the second quarter and it continued above average for the remainder of the year.

BROWN SOFT SCALE (Coccus hesperidum) infestations occurred on citrus in San Joaquin and Orange Counties, CALIFORNIA. Infestations in TEXAS were of such a nature as to warrant control on citrus in Cameron and Hidlago Counties. This soft scale was above normal in FLORIDA citrus but unimportant during the first part of the year.

CITRICOLA SCALE (Coccus pseudomagnoliarum) was light on citrus in Fresno, Fresno County, CALIFORNIA.

BLACK SCALE (Saissetia oleae) populations were greatly reduced by leaf drop following the severe December, 1962, freeze in FLORIDA. Only 3 percent of the defoliated groves showed a few scales in March. This soft scale increased rapidly in May and June on a few undamaged groves. Black scale was generally light on citrus in southern CALIFORNIA where biological control was an important factor.

FLORIDA WAX SCALE (Ceroplastes floridensis) became unusually abundant in 2 FLORIDA citrus groves but it did no damage.

PURPLE SCALE (Lepidosaphes beckii) was above average in abundance in FLORIDA groves with less than 50 percent defoliation due to the freeze. Populations dropped entirely with the leaves and fruit on freeze-damaged groves early in the year. This armored scale increased in east coast and south central goves in September. It continued to be more widespread than normal at the end of the year. Trace to medium infestations were noted on CALIFORNIA citrus. Purple scale was more prevalent in groves that were frozen during the winter of 1962. Parasites were scarce in Orange County. In TEXAS, moderate infestations occurred on citrus in the Rio Grande Valley.

CHAFF SCALE (Parlatoria pergandii) was light to medium in a limited number of CALIFORNIA citrus groves in Escondido, San Diego County. It was above normal abundance in FLORIDA on undamaged citrus following the severe freeze but populations were greatly reduced by leaf and fruit drop on damaged groves. Only 3 percent of the defoliated trees showed a few scales on new growth in March. This armored scale increased in both damaged and undamaged groves by the second quarter of the year. In undamaged groves, chaff scale infested 38 percent of the groves during that period. Most infestations remained light to moderate because of the high degree of parasitism through the remainder of the year.

The entire populations of YELLOW SCALE (Aonidiella citrina) fell with the leaves and fruit in FLORIDA following the severe freeze in December, 1962, on damaged trees. It increased to normal numbers in June, however. It continued higher than normal until October when record high levels of 39 percent of the groves were infested and were in the moderate to heavy category. This scale insect declined in November and December despite low and decreasing degree of parasitism. Yellow scale was light to medium in Tulare County, CALIFORNIA.

CALIFORNIA RED SCALE (Aonidiella aurantii) was widespread on citrus in CALIFORNIA. Biological control was an important check.

FLORIDA RED SCALE (Chrysomphalus aonidum) entire population fell with the leaves and fruit damaged in FLORIDA groves following the severe freeze in December, 1962. In undamaged groves, this scale insect dropped to the lowest level of 13 years of record during the second quarter of the year and remained at this record low level for the remainder of 1963.

CAMPHOR SCALE (Pseudaonidia duplex) was found as light infestations in 2 groves near De Land, FLORIDA. This armored scale is seldom seen in commercial groves.

Two ARMORED SCALES (Unaspis citri and Pinnaspis strachani) were above normal levels in FLORIDA. U. citri increased on trees defoliated by the severe freeze and became injurious during the second quarter of the year. It was also more prevalent than normal during July to September. P. strachani developed moderately high infestations on a few east coast groves during May and June on undamaged trees. It continued to be more widespread than average in the last quarter of the year but heavy infestations were scattered and parasitism kept it under control.

COTTONY-CUSHION SCALE (Icerya purchasi) was light on citrus in San Diego and Fresno Counties, CALIFORNIA. This margarodid scale is usually held in check by vedalia (Rodolia cardinalis). Cottony-cushion scale occurred on citrus trees in the Rio Grande Valley of TEXAS in moderate numbers.

CITRUS MEALYBUG (Pseudococcus citri) was medium locally in San Diego County, CALIFORNIA, and light in coastal Santa Barbara County. LONG-TAILED MEALYBUG (P. adonidum) was light on citrus in Capistrano, Orange County, California. MEALYBUGS were more abundant than usual in undamaged FLORIDA citrus groves during May to September but little damage occurred.

APHID infestations were of little concern on undamaged citrus groves in FLORIDA during the first of the year but they reached the normal annual peak of abundance in mid-April on freeze-defoliated trees. Instead of the usual May decrease, aphids increased to record high levels and caused much dwarfing and curling of new foliage of freeze-damaged trees. Decline to noneconomic levels occurred in late May but populations remained above normal through June. BLACK CITRUS APHID (Toxoptera aurantii) was heavy on citrus in Yolo County, CALIFORNIA, and a few other locations in the State. This aphid occurred throughout the year on various hosts in 1963. MELON APHID (Aphis gossypii) was present on southern California citrus early in the year.

WHITEFLIES were above normal in undamaged groves of FLORIDA during the first quarter of the year and more abundant than usual in May and June. Immature whiteflies were abnormally abundant and widespread in December when they reached the highest population in 12 years of record. Adults and eggs were near normal levels at the same time.

CITRUS RUST MITE (Phyllocoptruta oleivora) was collected for the first time in ARIZONA at Yuma, Yuma County, on lemons. Because of the normally dry conditions, it is doubtful that this eriophyid mite will become well established. Moderate to heavy infestations occurred in Cameron County, TEXAS, and some areas required control measures. Citrus rust mite remained active on frozen fruit following the severe freeze in FLORIDA. It was scarce on new growth in March but attained normal abundance in May and reached injurous level in June. Citrus rust mite was the major problem in citrus groves when high populations, continuing high, developed in July through the end of the year. Citrus rust mite was generally light or spotty on CALIFORNIA citrus in Santa Barbara and San Diego Counties.

CITRUS BUD MITE (Aceria sheldoni) was present as light infestations on citrus in Santa Barbara, San Diego and Ventura Counties, CALIFORNIA.

A PINK CITRUS MITE (Aculus pelekassi) was discovered in Pasco County, FLORIDA, during 1963. It had been previously known in 13 other counties.

CITRUS FLAT MITE (Brevipalpus lewisi) was fairly heavy on CALIFORNIA citrus during September in Imperial County. Scar damage by this false spider mite was abundant and general in ARIZONA. Tangarines in Yuma, Yuma County, were particularly susceptible.

TEXAS CITRUS MITE (Eutetranychus banksi) was above normal in undamaged citrus groves of FLORIDA during the first of the year and reached a record high level in May and still higher level in June when 68 percent of the undamaged groves had moderate to heavy infestations. Populations in cold-damaged groves increased by July and those in undamaged groves decreased. The decline in August resulted in moderately low levels which at its lowest point was still higher than in any other prior September. About 22 percent of the groves had infestations in the autumn which was a record high for that time of the year. This spider mite was especially numerous in cold-damaged groves.

YUMA SPIDER MITE (Eotetranychus yumensis) was light on citrus in Coachella Valley of CALIFORNIA.

CITRUS RED MITE (Panonychus citri) increased slowly about midyear in FLORIDA and never attained the normally high summer populations. The scattered, heavy infestations that occurred were mainly in cold-damaged groves. In CALIFORNIA, light to medium infestations were noted in a few locations. This spider mite has extended its range within the State over the past years. EUROPEAN RED MITE (P. ulmi) was heavy locally on citrus in Butte County, California.

SPIDER MITES occurred in varying numbers on TEXAS citrus in the Rio Grande Valley. In citrus groves defoliated by the severe freeze in FLORIDA in December, 1962, MITES were removed by the mechanical loss of leaves. Mites were not directly harmed by the cold and a few persisted for a few days on green twigs. All mite species were very scarce on the new flush of growth in March.

By continuing an extensive trapping program, Federal and State personnel discovered MEDITERRANEAN FRUIT FLY (Ceratitis capitata) shortly after it entered FLORIDA for the third time in June of 1962. This infestation was successfully eliminated in April, 1963. Only 723,000 aggregate acres required treatment in Broward, Dade and Palm Beach Counties. A fourth invasion of this pest was discovered in June, 1963, near the Miami International Airport, Dade County. One additional male was found on August 28 at El Portal also near Miami. Prompt Federal and State action eradicated this infestation in 5 months by treating an aggregate of 72,565 acres. The last application was made in October. Following a period of 90 fly-free days, State and Federal regulations were removed. Plans are now underway to continue the detection program which gave the State and Federal personnel a distinct advantage in eradication of these last two invasions of Mediterranean fruit fly.

A female MEXICAN FRUIT FLY (Anastrepha ludens) was recovered from a McPhail trap in Nogales, Santa Cruz County, ARIZONA, on July 9, 1963. This is the first record of this fruit fly in the State. Continued recovery of both male and female flies occurred during the summer and fall. No other stages of this pest were found. A single male Mexican fruit fly was trapped on the CALIFORNIA side of the United States-Mexican border during 1963. Trapping continued during the year with negative results. Bait sprays were applied at regular intervals.

An extensive trapping program for foreign fruit flies, including ORIENTAL FRUIT FLY (Dacus dorsalis), was conducted throughout CALIFORNIA with negative results.

ORANGE-DOG (Papilio cresphontes) larvae became a serious problem on citrus during the fall months in ARIZONA. The heaviest infestations were found in Maricopa, Pinal and Yuma Counties.

Although larvae of SUNFLOWER MOTH (Homoeosoma electellum) have been found in commercial sunflowers, this phycitid moth was detected on citrus in ARIZONA for the first time. Infestations were found on oranges in Yuma area, Yuma County.

ORANGE TORTRIX (Argyrotaenia citrina) was a pest of considerable importance on oranges over CALIFORNIA most of the year. A LEAF ROLLER MOTH (Platynota stultana) damaged citrus in many areas of ARIZONA, but particularly in Yuma County. Concentrated control efforts were necessary in some areas.

CITRUS THRIPS (Scirtothrips citri) was abundant in the fruit-growing areas of Maricopa and Yuma Counties, ARIZONA. Light to medium infestations were found in the citrus-growing areas of CALIFORNIA; THRIPS in general were very prevalent statewide with citrus and avocados most affected.

KATYDIDS damaged citrus during May and June in Riverside and Los Angeles Counties, CALIFORNIA, and GRASSHOPPERS were more common than average in FLORIDA citrus groves but they have been of little concern.

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